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WILDLIFE REVIEW

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June 1963 Patuxent Wildlife Research Center, Laurel, Maryland No. 110

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor,
and Paul A. Stewart, assistant editor.

NATURAL RESOURCES & CLIMATE

Edwards, R. Y. (Dept. Recreation & Conserv., Victoria, British Columbia, Canada.) WHO WANTS WILDLIFE? Canadian Audubon 25(1): 1-6, illus. Jan.-Feb. 1963. WR 110: 2

"There are hunters of orchids and photographers of spiders, sketchers of flowers and identifiers of trees, mosses, frogs, snakes, and dragon flies.... Some of these activities will increase up to 40 times their present magnitude in the next forty years!... We may have to ration visits to parks in order to keep them from being trampled to death."

Koskimies, Jukka. RIISTAN SOPEUTUMINEN KULTTUURILUONTOON. [ADAPTATION OF WILDLIFE TO CULTURE LANDSCAPES.] Suomen Riista 15: 188-195, 2 figs. 1962. [In Finnish with English summ.] WR 110: 2

Modern land-use has greatly changed the living conditions of wildlife. The adjustments of wildlife toward changed habitats is more important in affecting an animal's abundance than the influences of man directly toward the animal.--From summ.

Swift, Ernest. (Natl. Wildl. Federation, 1412 16th St., NW, Washington, D. C.) CONQUEST, SURVIVAL AND ENJOYMENT. Va. Wildl. 24(3): 4, 20, illus. Mar. 1963. WR 110: 2

"Our beautiful country is becoming less beautiful, but most insidious are the less beautiful attitudes of slothfulness and indifference.... We are now involved in a national program of recreation as never before conceived.... Recreation need not involve a bedlam of speed and noise, the obligation of a full bag limit, nor the littering of campsites. Unrelentingly will industry and recreation engrave their stories on the landscape for better or for worse. Only from the land come the secrets of managing the land."

Swift, Ernest. (Natl. Wildl. Federation, 1412 16th St., NW, Washington, D. C.) THE NEXT HUNDRED YEARS. Texas Game & Fish 21(3): 10-11, illus. Mar. 1963. WR 110: 2

"Agriculture in recent years has made astonishing developments in new methods of intensive production on fewer acres: forest industries are proving the practical value of sustained yield through various methods, forest fire damage is being reduced, wildlife managers are placing greater emphasis on habitat control; and the public, generally, has become more concerned with stream pollution and ground water levels. These are all good signs of the times, but can lead to a false sense of security. There is still terrific waste of our resources."

SOILS

Byrd, Huger S., and others. SOIL SURVEY OF OCONEE COUNTY, SOUTH CAROLINA. SCS, Ser. 1958, no. 25. i + 87 p., 21 figs. + folded maps based on aerial photos and bound in. Feb. 1963. Sold by Supt. Documents. WR 110: 2

A section on wildlife is included.

Elder, John H., Jr., and others. SOIL SURVEY OF NORTHUMBERLAND AND LANCASTER COUNTIES, VIRGINIA. SCS, Ser. 1959, no. 22. i + 52 p., 9 figs. + folded maps based on aerial photos and bound in. May 1963. Sold by Supt. Documents. WR 110: 2

Includes a section on wildlife.

Kunkle, W. Merrill, and others. SOIL SURVEY OF CHESTER AND DELAWARE COUNTIES, PENNSYLVANIA. SCS, Ser. 1959, no. 19. i + 124 p., 1 fig. + single-fold maps based on aerial photos and bound in. May 1963. Sold by Supt. Documents. WR 110: 2

Includes a section on wildlife in which the soils have been rated according to their potential as habitats for the principal kinds of game.

SOILS--Continued

Porter, H. C., and others. SOIL SURVEY OF FAIRFAX COUNTY, VIRGINIA. SCS, Ser. 1955, no. 11. ii + 103 p., 11 figs. + single-fold maps based on aerial photos and bound in. May 1963. Sold by Supt. Documents. WR 110: 3

Sautter, Howard E., and others. SOIL SURVEY OF DUNDY COUNTY, NEBRASKA. SCS, Ser. 1959, no. 20. i + 86 p., 37 figs. + folded maps based on aerial photos and bound in. Feb. 1963. Sold by Supt. Documents. WR 110: 3

CONSERVATION EDUCATION

Marckworth, Gordon D. (Univ. Wash., Seattle.) STATISTICS FROM SCHOOLS OF FORESTRY FOR 1962: DEGREES GRANTED AND ENROLLMENTS. J. Forestry 61(3): 210-216. Mar. 1963. WR 110: 3

Undergraduate enrollment in forestry schools reached an all-time high in 1962, with 8,757 undergraduate and 1,109 graduate students. In the junior and senior classes, general forestry enrollments ranked first and wildlife management second with 69% and 11%, respectively. In the graduate schools, 53% were registered in general forestry and 15% in wildlife management programs.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Byrd, Morris, W. C. Young, and Verne E. Davison. (SCS, Athens, Ga.) SEED YIELDS OF SHRUB LESPEDEZAS IN ARKANSAS. J. Wildl. Mgmt. 27(1): 135-136. Jan. 1963. WR 110: 3

Ripley, Thomas H., Frank M. Johnson, and William H. Moore. (SE Forest Expt. Sta., Asheville, N. C.) A MODIFICATION OF THE LINE INTERCEPT METHOD FOR SAMPLING UNDERSTORY VEGETATION. J. Range Mgmt. 16(1): 9-11, 3 figs. Jan. 1963. WR 110: 3

Although the line intercept method was designed for use on grassland communities, it appears to be equally useful for evaluating understory conditions in the forest. Metal stakes were used to facilitate relocation of transect lines. Sample data sheets are included in the article.

Roughton, Robert D. (Colo. State Univ., Fort Collins.) A REVIEW OF LITERATURE ON DENDROCHRONOLOGY AND AGE DETERMINATION OF WOODY PLANTS. Colo. Dept. Game & Fish, Tech. Bull. no. 15. vi + 99 p., 5 figs. Dec. 1962. WR 110: 3

An excellent review of the literature on aging trees and shrubs. Growth rings are considered unreliable for indicating age because of omitted and multiple annual rings. Omitted or multiple rings may result from injury by fire, drought, extreme cold or insect defoliation, depending on the time and duration of their occurrence. A case was reported in which trees known to be 12 years old had 35-40 growth rings. Other methods discussed in addition to growth-ring counts were: estimated age classes, bud-scar and branching node counts, and growth-ring analysis. The limitations of each method are discussed. A bibliography of about 500 titles is included.

Sanderson, H. Reed. SURVIVAL OF RODENT CACHED BITTERBRUSH SEED. Pacific SW Forest & Range Expt. Sta., Res. Note no. 211. 3 p., 2 figs. 1962. WR 110: 3

Abstract: Seedlings and young plants of antelope bitterbrush are generally scarce in northeastern Calif., but in the spring of 1960 a large flush of seedlings emerged from seed in rodent caches. Seedlings that had to compete with the native vegetation and cheatgrass failed to survive. Where competing vegetation had been removed, survival was excellent.

Urbański, Jarosław. GATUNKOWA OCHRONA ROŚLIN W BULGARSKIEJ REPUBLICE LUDOWEJ. [SPECIFIC PROTECTION OF PLANTS IN THE PEOPLE'S REPUBLIC OF BULGARIA.] Chrońmy Przyrodę Ojczystą 18(4): 37-43, 59, 3 figs. July-Aug. 1962. [In Polish with English summ.] WR 110: 3

In 1961 Bulgaria published a list of plants protected throughout the country. It includes 59 spp., 20 of which are woody plants and 39 herbaceous plants.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Allred, Dorald M., D. Elden Beck, and Clive D. Jorgensen. BIOTIC COMMUNITIES OF THE NEVADA TEST SITE. Brigham Young Univ. Sci. Bull., Biol. Ser. 2(2). [iii] + 52 p., 44 figs. + frontispiece. Feb. 1963. WR 110: 4

A description of the extent and the general geography of the Nevada test site with notes on climatic conditions and history of past biological investigations. Five plant communities are described and pictured. Vertebrate and invertebrate animals are listed showing their known distribution by community and other areas. The bibliography includes 83 titles.--W. T. Van Velzen.

Bider, J. Roger. (Univ. Montreal, Montreal, Quebec, Canada.) DYNAMICS AND THE TEMPORO-SPATIAL RELATIONS OF A VERTEBRATE COMMUNITY. Ecology 43(4): 634-646, 7 figs. Autumn 1962. WR 110: 4

The dynamics and time-space relations of a vertebrate community were studied in Texas by means of sand tracking on soil-prepared transects. Results indicated that sand-tracking is a useful technique. The summer residents of the chosen sand community consisted of 22 spp. which constituted 24.4% of the known terrestrial summer residents of the area.

Davis, Sterling P. A LIMNOLOGICAL SURVEY OF THE BACKWATER OF THE LOWER ST. JOE RIVER, IDAHO. M.S. thesis, Univ. Idaho. 57 p. 1961. WR 110: 4

Courtesy/ Paul D. Dalke.

King, Wayne. (Univ. Chicago, Ill.) THE OCCURRENCE OF RAFTS FOR DISPERSAL OF LAND ANIMALS INTO THE WEST INDIES. Quart. J. Fla. Acad. Sci. 25(1): 45-52. 1962. [From Biol. Abstr. 41(2), 1963.] WR 110: 4

Records in literature indicate that land animals are frequently rafted on logs and herbaceous plants and that tree islands are not needed. Observations were made at Rio Tortuguero, Costa Rica, during July and August, 1960, to determine types of rafts formed, and conditions necessary to get them into open sea. Rafting occurred on only 8 days, but 1,500,000 sq ft of herbaceous plant rafts (Eichhornia and Panicum) entered the ocean during that period. Several spp. of Eichhornia occur in the W. Indies indicating that some rafts might have reached the islands.--Author.

Mann F., Guillermo. (Univ. Chile, Santiago.) REGIONES BIOGEOGRAFICAS DE CHILE. [BIOGEOGRAPHICAL REGIONS OF CHILE.] Invest. Zool. Chilenas 6: 15-49, 33 figs. 15 July 1960. [In Spanish with English summ.] WR 110: 4

"Life communities on Chilean continental territories are grouped according to their fundamental climax formations." Community types and typical animal representatives for each are illustrated by black-and-white drawings.--W. T. Van Velzen.

Stephanou, A. [WILDLIFE SITUATION IN GREECE.] Dassika Chron. 47(4): 412-423. Sept. 1962. [From Bibliog. Agr. 27(2), 1963. In Greek.] WR 110: 4

WILDLIFE--NATURAL AREAS & REFUGES

Alexandrowiczowa, Zofia. OCHRONA PRZYRODY W WEGIERSKIEJ REPUBLICE LUDOWEJ. [NATURE CONSERVATION IN THE HUNGARIAN PEOPLE'S REPUBLIC.] Chrońmy Przyrode Ojczysta 16(4): 28-33, 52-53, 4 figs. July-Aug. 1960. [In Polish with English summary.] WR 110: 4

At present there are about 150 nature reserves and natural monuments in Hungary. No national park has been established yet. The majority of the protected areas are in the mountainous northern and southwestern parts of the country.

Drzał, Maria. PARKI NARODOWE NA WYSPACH FILIPIŃSKICH. [THE NATIONAL PARKS OF THE PHILIPPINE ISLANDS.] Chrońmy Przyrode Ojczysta 18(1): 22-30, 63, 3 figs. Jan.-Feb. 1962. [In Polish with English summ.] WR 110: 4

Description of the 39 national parks (totalling 2,465 square kilometers in area) of the Philippines.

Errington, Paul L. THE PRICELESSNESS OF UNTAMPERED NATURE. J. Wildl. Mgmt. 27(2): 313-320. Apr. 1963. WR 110: 5

Abstract: As the number of undisturbed natural areas decreases, human beings experience increasingly greater difficulty in refraining from tampering with those that remain. Man can be overwhelming, even in the places he dedicates to Nature and to natural values. Much of what passes for conservation practice is misguided activity. This may be prompted by a Conquest of Nature philosophy, a tradition for neatness, or a desire to be obvious. Nature should be left a few places in which to be spontaneous. In areas that have departed somewhat from their natural state, some manipulation may be desirable. The things that belong in an untampered, undefiled place should serve as the criteria for restoration of natural areas.

Fabijanowski, Jerzy. O ZASADACH ZAGOSPODHROWANIA LEŚNYCH REZERWATÓW CZEŚCIOWYCH. [THE PRINCIPLES OF MANAGEMENT OF THE PARTIAL FOREST RESERVES.] Chrońmy Przyrode Ojczysta 17(5): 3-10, 52, 5 figs. Sept.-Oct. 1961. [In Polish with English summary.] WR 110: 5

Kulig, L. [THE WILDLIFE RESERVATION OF "ROMANKA".] Archiv Forstwesen 11 (7): 762-770. 1962. [From Bibliog. Agr. 27(2), 1963. In German with English summ.] WR 110: 5

"In Romania."

Kwiatkowska, Alina. NOWE KIERUNKI W ROZWOJU OCHRONY PRZRODY W RUMUNII. [NEW TRENDS IN THE DEVELOPMENT OF NATURE CONSERVATION IN RUMANIA.] Chrońmy Przyrode Ojczysta 16(3): 26-33, 62, 1 fig. May-June 1960. [In Polish with English summ.] WR 110: 5

The scientific aspect of nature conservation has been emphasized since nature conservation was transferred from the Ministry of Agriculture to the Academy of Science in 1950. There are about 150 legally established nature reserves in Rumania.

Prószyński, Jerzy. OCHRONA PRZYRODY W INDONEZJI. [NATURE CONSERVATION IN INDONESIA.] Chrońmy Przyrode Ojczysta 16(6): 26-37, 55-56, 7 figs. Nov.-Dec. 1960. [In Polish with English summ.] WR 110: 5

There are 14 nature parks totalling 15,368 square kilometers and 103 nature reserves totalling 5,885 square kilometers in Indonesia.

Smiley, Daniel, chairman. (Nature Conservancy, 2039 K St., NW, Washington, D. C.) NATURE CONSERVANCY POLICIES FOR THE PRESERVATION, CARE, AND USE OF NATURAL AREAS. Nature Conservancy Policy Bull. 2. viii + 28 p. July 1961. WR 110: 5

The objectives of The Nature Conservancy are fully stated in this publication which is available for free distribution.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Slobodkin, L. B. (Dept. Zool., Univ. Mich., Ann Arbor.) ENERGY IN ANIMAL ECOLOGY. Advances Ecol. Res. 1: 69-101, illus. 1962. [From Biol. Abstr. 42 (5), 1963.] WR 110: 5

Smith, Douglas E. THE EFFECTS OF IONIZING RADIATION IN HIBERNATION. Bull. Museum Comp. Zool. 124: 493-505. Nov. 1960. [From J. Mammal. 44(1), 1963.] WR 110: 5

Sokolova, Z. A. (Moscow State Univ., USSR.) [FEATURES OF THE STRUCTURE OF THE EYE IN INSECTIVORES WHICH ARE SPECIFICALLY ADAPTED TO THE BURROWING WAY OF LIFE.] Zhur. Obshch. Biol. 23(2): 135-144, illus. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 5

Tyurin, P. S. [THE TIMES OF REPRODUCTION OF CERTAIN VERTEBRATES OF KIRGIZ.] Izvest. Akad. Nauk Kirg. SSR Ser. Biol. 1(4): 161-165. 1959. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 3D30. Transl. of Russian abstr.] WR 110: 6

A general prolongation of reproduction period determined by temperature conditions of reservoirs, feeding conditions and others was observed in a series of bird spp. (mallard, shortnosed canard, lapwing, wild duck), and several mammal spp. (squirrel, muskrat) of the mountain regions of central Asia.

Yurgenson, P. B. (All-Union Sci.-Res. Inst. Forest. & Mechanization Forest, Pushkino, Moscow Oblast, USSR.) [THE ROLE OF THE TROUBLE FACTOR IN THE ECOLOGY OF MAMMALS AND BIRDS.] Zool. Zhur. 41(7): 1056-1060. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 6

Along with other ecological factors controlling existence and population abundance of wild vertebrates is the factor which is called here "trouble factor". This innate timidity is particularly well pronounced in big mammals and birds. This factor is set in action by human activity and exerts an adverse effect even when not connected with direct pursuit. Frequent fright traumatizes the nervous system of the animal, disturbs normal nutrition, rest and reproduction. All these factors affect adversely the condition of individuals and that of the population as well. This is quite apparent in birds of Tetraonidae reducing their numbers in densely inhabited localities which in other respects are often favorable for these birds. Frequent frightening of their hatch is fatal (detection by beasts of prey, straggle of nestlings).--Auth. summ. transl.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Benedict, W. V., and W. L. Baker. (U. S. Forest Serv., Washington, D. C.) PESTICIDES IN FORESTRY -- A REVIEW OF CURRENT PRACTICES. J. Forestry 61(5): 340-344, 3 figs. May 1963. WR 110: 6

A defense of current pest control practices in forestry. In 1962, a total of 2.4 million pounds of chemical pesticides was used in forestry. Of this amount 1.5 million pounds were applied by aircraft. The largest single unit of forest land ever sprayed in the U. S. was in Idaho in 1957 when a block of 488,000 acres was treated.

Cramp, Stanley. (32 Queen Court, Queen Square, London, W.C.1.) TOXIC CHEMICALS AND BIRDS OF PREY. British Birds 56(4): 124-139, 2 figs. Apr. 1963. WR 110: 6

A survey of the decline in the numbers of birds of prey in the British Isles with references to Europe and the USA. Evidence is presented of deaths attributed to toxic chemicals, especialy chlorinated hydrocarbons.--W. T. Van Velzen.

Cummings, Maynard W. (Univ. Calif., Davis.) PESTICIDES IN VERTEBRATE PEST CONTROL. Proc. 2nd Ann. Conf. on the Use of Agr. Chemicals in Calif., 8 Jan. 1963, Univ. Calif., Davis. 4 p. 1963. WR 110: 6

In 1961 a total of 120,000 pounds of strychnine, 400,000 pounds of sodium fluoroacetate and 100,000 pounds of miscellaneous rodenticides were used in Calif. for vertebrate pest control. New research is being initiated on control of starlings in Calif.

Etter, Alfred G. (Mich. State Univ., East Lansing.) WHEN A STATE SPRAY KILLS THE STATE BIRD. Audubon Magazine 65(3): 134-137, illus. May-June 1963. WR 110: 6

Birds of various species, particularly robins (the Michigan state bird), continue to be found dead or dying with tremors on the Mich. State Univ. campus. On a week-end survey in 1962, after a DDT spraying of a 100-acre area, 25 dead birds were picked up. Tests of campus soil showed as much as 80 ppm of DDT.

Francis, Jean I., and J. M. Barnes. (Med. Res. Council Lab., Woodmansterne Road, Carshalton, Surrey, England.) STUDIES ON THE MAMMALIAN TOXICITY OF FENTHION (DIMETHYL 4-METHYLTHIO-3-TOLYL PHOSPHOROTHIONATE). World Health Organization/Vector Control/3--WHO/Mal/347. 17 p., mimeo. 2 July 1962. WR 110: 7

Investigations with the organophosphorus insecticide dimethyl 4-methylthio-3-tolyl phosphorothionate showed considerable differences in its toxicity to various species of mammals. Fowls were found to be very sensitive. A single dose produced prolonged effects, suggesting that this material may be stored in the tissues and then released.--W. T. Van Velzen.

Hill, Edward Polk III. THE EFFECTS ON BOBWHITE AND COTURNIX QUAIL FROM INGESTION OF KEPONE-KILLED CRICKETS, KEPONE-PEANUT BUTTER BAITS, AND IMPORTED FIRE ANTS. M.S. thesis, Auburn Univ. 51 p. 1962. WR 110: 7

In the four tests in which kepone-killed house crickets were fed to pen-reared quail, it was not possible to produce visible toxic symptoms during a two-week period. The highest intake of kepone with kepone-killed crickets was far below the level known to produce chronic symptoms in quail. In 4 tests with quail fed kepone-peanut butter bait, all quail consumed the bait and exhibited symptoms of poisoning. There were indications that adult quails are less affected than juveniles and have greater ability to recover after suffering severe effects from kepone poisoning. It was impractical to obtain kepone-killed ants in numbers sufficient to conduct tests on secondary poisoning.--From abstr.

Hunt, Eldridge G., and James O. Keith. (Calif. Dept. Fish & Game, Sacramento.) PESTICIDE-WILDLIFE INVESTIGATIONS IN CALIFORNIA--1962. Proc. 2nd Ann. Conf. on the Use of Agr. Chemicals in Calif., 8 Jan. 1963, Univ. Calif, Davis. 29 p. 1963. WR 110: 7

A generalized report on Calif. studies of pesticide effects on wildlife. The effect on non-target species of 1080, strychnine, zinc phosphide, endrin, parathion, malathion, Baytex, SD-7438, Guthion, Sumithion, DDT, dieldrin, and toxaphene is considered. Studies included the following: field evaluations of effects of large-scale pest-control programs conducted by federal, state and private agencies, laboratory and enclosure studies to determine toxicity and effects of pesticides on fish and wildlife, investigations of reported losses of fish and wildlife from suspected poisoning, development of detection methods, and dissemination of information on methods of evaluating pesticide effects on fish and wildlife.

Hurtig, H. (Canada Dept. Agr., Ottawa, Ontario.) PROFESSIONAL RESPONSIBILITY IN ASSOCIATION WITH PESTICIDE USE. 25th Fed.-Provincial Wildl. Conf. (Ottawa, Canada), 1961. p. 39-47. 1962. WR 110: 7

"Just as scientists have discovered nuclear energy, developed it for war, and are going on to harness it for the benefit of man, so must we continue to be scientists first and understand that we have to consider the behaviour of a pesticide chemical in the several environments in which we wish to employ it--in soil, on plants, in plants, and animals, as well as inside insects and plant disease organisms. The sequence of ecological changes for a pesticide chemical in the whole range of possible alternative situations and environments is just as important as the study of the ecology of the pest. The two types of studies must be carried out to complement each other if we are ever going to achieve the desirable state of prescription pest control through all the tools now available to us."

Taylor, John W. EAGLES OR PESTICIDES? Md. Conserv. 40(1): 2-6, illus. Jan.-Feb. 1963. WR 110: 7

This is a well-prepared popular account of the findings of the Patuxent Wildlife Research Center, the National Audubon Society, and Jackson M. Abbott. With few exceptions, concentrations of DDT were higher in tissues of birds found dead than in those shot. DDT was found in the brain of eagles dying from unknown causes up to 71.5 ppm. In Jan. 1962, a survey of the eagle population

of the contiguous 48 states showed 3807 birds to be present. A study of the eagle population in the Chesapeake Bay area revealed 53 active nests in 1962. The outcome of 32 nests was determined, and it was found that only 2-3 eaglets were produced.

U. S. Dept. Agriculture. INSECTICIDE RECOMMENDATIONS OF THE ENTOMOLOGY RESEARCH DIVISION FOR THE CONTROL OF INSECTS ATTACKING CROPS AND LIVESTOCK FOR 1963. USDA Agr. Handbook no. 120. 188 p. 1963. WR 110: 8

These tabular instructions for using insecticides include the following headings: crop and insect, insecticide, tolerance, minimum days from last application to harvest or feeding, formulation, dosage per acre, where and when to apply, and safety restrictions. "These safeguards are for the protection of the ultimate consumer of food crops and animal products, and of honey bees, fish, and wildlife." When considering the recommended safety restrictions for some of the insecticides (for example, parathion) one wonders if the precautions are practical for use in safeguarding wildlife. It is recommended that all persons and animals be kept off a treated area for 48 hours after the application of parathion to soil.

WILDLIFE--PARASITES & DISEASES

Thompson, Harry V. ECOLOGY OF DISEASES IN WILD MAMMALS AND BIRDS. Vet. Record 73(49): 1334-1337. 9 Dec. 1961. [From J. Mammal. 44(1), 1963.] WR 110: 8

WILDLIFE--POPULATIONS & FLUCTUATIONS

Hanson, William R. (Los Angeles State Coll., 5151 State College Dr., Los Angeles 32, Calif.) CALCULATION OF PRODUCTIVITY, SURVIVAL, AND ABUNDANCE OF SELECTED VERTEBRATES FROM SEX AND AGE RATIOS. Wildl. Monographs no. 9. 60 p., 1 fig. Mar. 1963. WR 110: 8

Published methods for estimating wildlife productivity, survival and abundance with use of sample sex and age ratios are reviewed and evaluated. An equation is derived for computing the number of subadults that must be added to the adult population each year to hold the adult sex ratio stable. Although the absolute survival rate of no class of a population is known, it is often valuable to compute the rate of differential survival of a certain segment of the population. Methods are discussed for estimating the absolute abundance of a population, based on the change in sample sex or age ratios caused by the killing of a known number of animals.--From summ.

WILDLIFE--TECHNIQUES

Cochran, William W., and Rexford D. Lord, Jr. (Univ. Minn., Minneapolis.) A RADIO-TRACKING SYSTEM FOR WILD ANIMALS. J. Wildl. Mgmt. 27(1): 9-24, 10 figs. Jan. 1963. WR 110: 8

Abstract: This system of radio location has been used on rabbits (Sylvilagus floridanus), striped skunks (Mephitis mephitis), and raccoons (Procyon lotor). Size, weight, life, physical and electrical stability, and radiated power are important parameters of the transmitter. Mercury cells provide about 115 milliwatt hours per gram and were chosen as the transmitter power source. The transmitter is a transistor, crystal-controlled oscillator with the tank coil for the oscillator acting also as a magnetic dipole transmitting antenna. Antenna efficiencies of the order of 0.1 percent are obtained, yielding radiated power in the sub-microwatt region. The antenna is constructed of copper or aluminum and has a figure eight directional pattern. The complete transmitter without batteries weighs approximately 10 grams and costs approximately $8.00 for parts. Instructions for building transmitters are given. Transmitters were fastened to rabbits and skunks by means of harnesses and to

rabbits, skunks, and raccoons by collars. The harnesses did not prove satisfactory for long-term attachment. The receiver is a portable, battery-powered unit weighing 10 lbs including the batteries. It is crystal controlled on 44 switched channels with a 4 db noise figure and a 30 CPS bandwidth. A receiving system was assembled with commercially available units and used successfully for tracking skunks. The components of this system are a military surplus receiver (BC-453), a radio range filter (FL-13), and two transistorized radio frequency converters. The portable receiver is well adapted for tracking on foot using the null of its attached loop antenna for obtaining bearings on the animals carrying transmitters. The transmitters operate on different frequencies to avoid interference in taking bearings and to provide for individual identification.

Kanavau, J. Lee. (Univ. Calif., Los Angeles.) CONTINUOUS AUTOMATIC MONITORING OF THE ACTIVITIES OF SMALL CAPTIVE ANIMALS. Ecology 44(1): 95-110, 10 figs. Winter 1963. WR 110: 9

An enclosure and monitoring methods are described for obtaining continuous records of the activities of small mammals. Twenty-two independent channels of information concerning position, movements and other activities are obtained. Representative examples of systems controls, programming and data reduction are given.--From summ.

Pfeiffer, C. J., and G. H. Gass. (Southern Ill. Univ., Carbondale.) A SIMPLE, INEXPENSIVE METABOLISM CAGE FOR SMALL MAMMALS. Canadian J. Comp. Med. & Vet. Sci. 27(3): 69-70, 1 fig. Mar. 1963. WR 110: 9

Construction of a cage costing less than $5.00 is described. This cage offers the advantages of complete separation of feces and urine with minimum evaporation of urine.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Bergerud, A. T. (Dept. Mines, Agr. & Resources, St. John's, Newfoundland, Canada.) TEN YEARS OF WILDLIFE RESEARCH IN NEWFOUNDLAND. 25th Fed.-Provincial Wildl. Conf. (Ottawa, Canada), 1961. p. 17-38. 1962. WR 110: 9

Two moose were released in Newfoundland in 1878 and 4 in 1904. Restricted hunting began in 1935, but by 1945 there was large-scale hunting with an unlimited number of licenses, although the kill was restricted to bulls only until 1952. Both sexes have since been legal game. The annual kill increased from 750 in 1945 to 8,000 in recent years. Annual license sales now approach 16,000. The snowshoe hare which was introduced into Newfoundland about a century ago ranks second to the moose in meat supplied. Research findings are discussed for these two species and for caribou, ptarmigan, lynx and beaver. A list of 29 published and unpublished reports on Newfoundland research is included.

Conner, Ernest, Jr. PROCEEDINGS OF THE FIFTEENTH ANNUAL CONFERENCE SOUTHEASTERN ASSOCIATION OF GAME AND FISH COMMISSIONERS, OCTOBER 22-25, 1961, ATLANTA, GEORGIA. Printed at Nashville, Tenn., by SE Assoc. Game & Fish Comms. vi + 485 p., illus. 1961 [1962]. Available at $1.50 to dues-paying members) from Forrest V. Durand, Sec'y.-Treas., Tenn. Game & Fish Comm., Nashville. WR 110: 9

Contains 81 papers and reports: 31 for the game management session, 26 for the fish management session and 24 for the general, information and education, law enforcement, and engineering sessions. Abstracts of most of the technical wildlife papers were entered in WR 108.

Elegido Alonso-Geta, Maximiliano. LA ADMINISTRACION, PUNTO DE EQUILIBRIO ENTRE EL CAZADOR Y LA CAZA. [MANAGEMENT AS A MEANS OF EQUILIBRIUM BETWEEN THE HUNTER AND THE GAME.] Montes 18(107): 403-409, illus., map. 1962. [From Biol. Abstr. 42(5), 1963. (In Spanish).] WR 110: 9

An explanation of the reasons for and principles of game management.

Kimball, Thomas L. (Natl. Wildl. Federation, Washington, D. C.) FOR PUBLIC RECREATION: PRIVATE DEVELOPMENT OF HUNTING AND FISHING. J. Soil & Water Conserv. 18(2): 49-53, illus. Mar.-Apr. 1963. WR 110: 10

"Private lands produce 80 percent of the game taken by hunting, and upon them is found 85 percent of the wildlife habitat.... Therefore, private landowners are in the driver's seat insofar as providing good hunting and fishing is concerned. They ought to be planning now to take advantage of this forthcoming seller's market in outdoor recreation." Some courses for action by farmers toward game production and commercial utilization of game are suggested.

Koivisto, Ilkka. RIISTANTUTKIMUSLAITOKSEN SIIPIMERKINTÄ vv. 1959-61. [GAME MARKING BY THE GAME RESEARCH INSTITUTE 1959-1961.] Suomen Riista 15: 196-209, 3 figs. 1962. [In Finnish with English summ.] WR 110: 10

During 1959-61 a total of 2595 birds and 186 mammals were marked in Finland by 200 volunteer assistants of the Game Research Institute.--From summ.

WILDLIFE--HUNTING AREAS & PROBLEMS

Kozicky, Edward L. (Nilo Farms, East Alton, Ill.) PLANT COVER MANAGEMENT ON SHOOTING PRESERVES. Modern Game Breeding 32(12): 14-15. Dec. 1962. WR 110: 10

Farming activity of some type enhances the financial income, helps to control undesirable plant succession and adds to the general attractiveness of the preserve. A grain and forage rotation offers the best possibility, but it's even possible to integrate dairy farming with a preserve operation.

Maxwell, Jack H. (Dept. Nat. Resources, Charleston, W. Va.) THE TRAGIC RESULT OF IGNORANCE / THE STORY OF HUNTING ACCIDENTS. W. Va. Conserv. 27(1): 5-8, illus. Mar. 1963. WR 110: 10

In W. Va. there were 109 hunting accidents in 1959, 86 in 1960, 64 in 1961 and 46 in 1962. Somewhat detailed analysis was made of the 1962 data. The most frequent type of accident involved mistaking a person for game. More hunters (23) were involved in accidents when hunting squirrels than other game. The deer season accounted for only five accidents, two of which were fatal heart attacks.

WILDLIFE--FOOD HABITS & TECHNIQUES

Harden, Cleo E. HOW TO PRESERVE ANIMAL AND OTHER SPECIMENS IN CLEAR PLASTIC. Naturegraph Co. (8339 W. Dry Creek Rd., Heraldsburg, Calif.). 64 p., illus. 1963. $1.00. WR 110: 10

This booklet contains easily-followed detailed instructions for preserving biological specimens in plastic blocks. The plastic mount is particularly useful in educational exhibits where no more than low-power magnification is to be used for examinations.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Allen, Durward L. (Purdue Univ., Lafayette, Ind.) THE COSTLY AND NEEDLESS WAR ON PREDATORS. Audubon Magazine 65(2): 85-89, 120-121, illus. Mar.-Apr. 1963. WR 110: 10

"The predator control program has long been opposed by many biologists on the grounds that it has gone beyond actual need and kills animals that are in many ways useful and desirable.... The predator control people's good fortune has continued and in 1963 they have available $2,506,000. Add to this co-operative contributions of $3,700,000, and the entire program amounts to $6,206,000."

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL--Continued

Burns, R. M. RABBIT REPELLENTS IN NORTH MISSISSIPPI. Tree Planters' Notes 45: 19-22. Mar. 1961. [From Bibliog. Agr. 27(1), 1963.] WR 110: 11
For protection of Pinus taeda.

Eddy, Gerald E. (Mich. Dept. Conserv., Lansing.) ANNUAL WASTE $223,000. Mich. Conserv. 32(1): 4-7, illus. Jan.-Feb. 1963. WR 110: 11
Almost $3.5 million has been spent on bounties in Mich. since 1935. Information is given to show that bounties are not effective for controlling predators, and more game for the hunter does not automatically follow predator control. Three groups of people want bounties: the people collecting the bounty money, the misinformed sportsman who thinks predator control invariably means more game to shoot, and the farmer who thinks that the bounty will reduce chicken-killing foxes.

Laun, H. Charles. (Stephens Coll., Columbia, Mo.) IT'S TIME FOR MUTINY ON THE BOUNTIES. Audubon Magazine 65(3): 146-149, illus. May-June 1963. WR 110: 11
A good popular account of the folly of the bounty system. Red fox bounties in Mich. in 1960 totaled an estimated $1 million. In one 20-year period, more than $1 million was paid in Pa. for weasel bounties. Bounties are currently paid on 33 animals in 33 states.

Stanton, Frank W. (Oreg. State Game Comm., Portland 5,) BIRD & MAMMAL REPELLENTS. Misc. Wildl. Publ. no. 5. iv + 31 p., illus. 1962. WR 110: 11
A useful summary on animal repellents, with 39 references.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Luman, Dave. (Oregon State Game Comm., P. O. Box 3503, Portland 8.) 1962 BIG GAME HARVEST. Oreg. State Game Bull. 18(4): 3-8, illus. Apr. 1963. WR 110: 11
Oreg. hunters harvested more than 150,000 big game animals in 1,787,000 man-days of hunting in 1962. With a total of 131,638 deer harvested by 263,838 deer hunters, the hunter success was 50%. This represented a decline in hunting success in 1962 compared with 1961 when success was 60%. Prior to 1962 there was constant annual increase in deer hunter success from 24% in 1948 to 60% in 1961. County totals are given for deer and elk harvested.

Massachusetts. [ANNUAL REPORT, 1962.] Mass. Wildl. 14(1): 1-21, illus. Jan.-Feb. 1963. WR 110: 11
Entire issue devoted to annual report of the Mass. Div. of Fisheries and Game. Releases of game farm birds included 58,450 ♂ and 14,488 ♀ pheasants, and 2,566 bobwhites. More than 230 acres of perennial food patches and 50 miles of roads were maintained.

Michigan. RESOURCES TODAY AND TOMORROW / DEPARTMENT OF CONSERVATION 1961-1962 REPORT. Mich. Conserv. 32(1): 17-40, illus. Jan.-Feb. 1963. WR 110: 11
Deer herd control continues to be the largest single project in game conservation in Mich. Approximately as many deer are wasted each year as are legally taken. Waste is by starvation, illegal kills, predation, disease and accidents. The two chief sources of waste (starvation and illegal kills) could be reduced by having "full-scale" antlerless deer seasons.

New Jersey. ANNUAL REPORT OF THE DIVISION OF FISH AND GAME FOR THE FISCAL YEAR COMMENCING JULY 1, 1961 AND ENDING JUNE 30, 1962. N. J. Dept. Conserv. & Economic Development. 64 p., illus. [1962.] WR 110: 11
The section on wildlife management (p. 29-41) covers game harvest, state game farms, public shooting and fishing grounds, game liberation, deer management, farm game habitat restoration, mosquito control, migratory bird studies, forest management, wildlife control, and field trials.

Saskatchewan. ANNUAL REPORT OF THE DEPARTMENT OF NATURAL RESOURCES...FOR THE FISCAL YEAR ENDED MARCH 31, 1962. Queen's Printer (Regina). 159 p., illus. 1962. WR 110: 12

The report of the Wildlife Branch (pages 43-64) covers activities of four divisions (Fur Management, Game Management, Wildlife Research, and Statistics). Statistics on waterfowl harvest, fur harvest, value of fur pelts, firearm accidents, game and fur prosecutions, wildlife crop damage insurance, types and costs of game licenses, classification of licenses issued, 1961-62 revenue, and 1961 game harvest are tabulated. A section on the Museum of Natural History (pages 95-106) contains information on the research and educational programs of the Museum.

WETLANDS & WILDLIFE

Arner, Dale H. (Miss. State Univ., State College.) PRODUCTION OF DUCK FOOD IN BEAVER PONDS. J. Wildl. Mgmt. 27(1): 76-81, 1 fig. Jan. 1963. WR 110: 12

Abstract: Field trials in central Ala. demonstrated that beaver (Castor canadensis) ponds could be economically managed for high yields of Japanese millet (Echinochloa crusgalli var. frumentacea). The methods used over a 3-year period, beginning in 1958, for 30 field trials consisted of: (1) breaking beaver dams late in spring or early summer, sowing Japanese millet, and maintaining drainage until millet matured, by repeated breaking if needed; and (2) breaking beaver dams, using log drains to maintain drainage, sowing Japanese millet, and removing drains after millet matured. Log drains proved to be the more economical method, $4.15 per acre. Yields of Japanese millet seed were 6 to 10 times those of the native plants of value for duck food that became established in drained beaver ponds. Landowners had no difficulty in leasing duck-shooting rights on the managed beaver ponds. The low cost per acre of establishing duck food plants indicates that this type of development is practical for beaver ponds in central Ala.

Robel, Robert Joseph. THE RELATIONSHIP OF CARP TO WATERFOWL FOOD PLANTS ON A WESTERN MARSH. Ph.D. thesis, Utah State Univ. 114 p. 1962. [From abstr. in Dissertation Abstr. 23(7), 1963.] WR 110: 12

A significant reduction occurred in the amount of submersed vegetation in ponds containing carp, the reduction being greater with larger carp population densities. Early spring was one of the more critical periods, and pens protected from carp in the spring had approximately 1/3 more vegetation at the end of the season than did similar areas containing carp during the spring.

Wilson, Kenneth A. (N. C. Wildl. Resources Comm., Raleigh.) NORTH CAROLINA WETLANDS / THEIR DISTRIBUTION AND MANAGEMENT. N. C. Wildl. Resources Comm. [Fed. Aid Rept.]. 169 p., illus. Apr. 1962. WR 110: 12

Wetlands in N. C. total about 5,885,000 acres, with 95% on the Coastal Plain. These wetlands are classified into 10 types, each of which is described as to characteristic vegetation and physiography. Bogs make up 40% of the acreage, sounds and bays 25%, wooded swamps 17%, bottomlands 8%, coastal open fresh water 7%, and irregularly flooded marsh 2%. The remaining 3% is inland open fresh water, regularly flooded salt marsh, shallow fresh marsh and deep fresh marsh. Suggestions are given for improvement of each of the 10 types of habitats for waterfowl.--From summ.

RANGELAND & WILDLIFE

Ziani, P. [THE IMPROVEMENT OF DEGRADED PASTURES BY FORAGE TREES, SHRUBS, AND SUB-SHRUBS.] Sum. List 86(5/6): 156-184. 1962. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, Mar. 1963. In Serbian with French summ.] WR 110: 12

Makes suggestions for improving degraded pastures in the karst regions of Jugoslavia by planting and sowing leguminous species. The results are given of analysis of nutrient value of some legumes (Colutea arborescens, Coronilla emerus and Pettina ramentacea).--Courtesy/ Frank M. Johnson.

FORESTLAND--FORESTRY & ECOLOGY

Reinhart, K. G., A. R. Eschner, and G. R. Trimble, Jr. (Fernow Exptl. Forest, Parsons, W. Va.) EFFECT ON STREAMFLOW OF FOUR FOREST PRACTICES IN THE MOUNTAINS OF WEST VIRGINIA. U. S. Forest Serv. Res. Paper NE-1. ii + 79 p., 25 figs. 1963. WR 110: 13

On 4 watersheds, increased flow of water in streams was observed to be directly proportional to the amounts of timber cut per acre. Care in the logging operation was clearly reflected in water quality, and maximum turbidities ranged from 56,000 ppm on the watershed with unplanned and undrained skidroads to 25 ppm on the watershed with carefully planned skidroads. Turbidity of streams was high only immediately after the logging operations.--From summ.

CONTROL OF VEGETATION WITH HERBICIDES, ETC.

Blackburn, Robert D. (USDA, Fort Lauderdale, Fla.) EVALUATING HERBICIDES AGAINST AQUATIC WEEDS. Weeds 11(1): 21-24, 2 figs. Jan. 1963. WR 110: 13

Abstract: Techniques were developed for evaluating herbicides on submersed, floating, and emersed aquatic weeds. Among 75 herbicides evaluated on three species of submersed weeds only 1:1'-ethylene-2:2'dipyridylium (diquat); 1:1'-dimethyl-4:4'-dipyridylium (paraquat); di-N,N-dimethylcocoamine salt of 3,6-endoxohexahydrophthalic acid (endothal); and acrylaldehyde (acrolein) gave 85 percent or better control at 1 ppmw in still-water tests. Only acrolein and the di-N,N-dimethylcocoamine salt of endothal were effective on submersed weeds at 1 ppmw in the limited-exposure test. The evaluation of 17 herbicides on three species of floating aquatic weeds indicated that diquat was effective when applied at rates of 1 or 2 lb/A. The tertiary fatty acid amines of 2,4-dichlorophenoxyacetic acid (2,4-D) were more effective on floating weeds than an ester of 2,4-D. Many of the 78 herbicides evaluated on alligatorweed (Alternanthera philoxeroides (Mart.) Griseb.) killed the tops, but only two retarded the sprouting of underwater nodes longer than 6 weeks. Applications of 20 lb/A of 2-(2,4,5-trichlorophenoxy)-propionic acid (silvex) in two formulations retarded sprouting of underwater nodes for 8 weeks.

Dalrymple, Arlo V., and Eddie Basler. (Columbia Forest Res. Center, P. O. Box 283, SW Mo. State Coll., Springfield.) SEASONAL VARIATION IN ABSORPTION AND TRANSLOCATION OF 2,4,5-TRICHLOROPHENOXYACETIC ACID AND RESPIRATION RATES IN BLACKJACK OAK. Weeds 11(1): 41-45, 5 figs. Jan. 1963. WR 110: 13

Abstract: Measurements of C^{14}-labeled 2,4,5-trichlorophenoxyacetic acid absorbed and translocated from treated leaves of blackjack oak (Quercus marilandica Muenchh.) showed that absorption and translocation were highest in early spring and decreased during May and June, so that there was a minimum at about the first of July. Absorption and translocation increased during July, August, and September. Measurements of soil moisture did not reveal a correlation of water stress and translocation rates. Extensive variations in the respiration rates of the leaf tissue occurred during the growing season. The trends in respiration rates generally paralleled the trends in translocation rates.

Frank, P. A., R. H. Hodgson, and R. D. Comes. (c/o Bur. Reclamation, USDI, Denver, Colo.) EVALUATION OF HERBICIDES APPLIED TO SOIL FOR CONTROL OF AQUATIC WEEDS IN IRRIGATION CANALS. Weeds 11(2): 124-128, 2 figs. Apr. 1963. WR 110: 13

Ninety-one herbicides and experimental compounds were evaluated at rates of 5 and 20 pounds per acre for herbicidal activity on Potamogeton pectinatus and P. nodosus. Twenty-one of the compounds showed some phytotoxicity at 20 pounds per acre; the other 70 were completely inactive. The compounds, with treatment rates and percent control, are tabulated.

Shipman, R. D. (Clemson Coll., Clemson, S. C.) SCRUB OAK CONTROL WITH FENURON PELLETS IN THE SOUTH CAROLINA SANDHILLS. J. Forestry 61(3): 217-220, 4 figs. Mar. 1963. WR 110: 14

Year-old seedlings of longleaf and slash pine were planted among scrub oaks (chiefly Quercus laevis), and one month after planting, the area was treated with fenuron pellets at rates of 30, 40, and 60 pounds per acre. Satisfactory control of the oaks was attained at all treatment rates, and first year survival of longleaf and slash pines was 68 and 76 percent respectively.--From abstr.

Watson, A. J., and M. G. Wiltse. (Dow Chemical Co., Midland, Mich.) TORDON...FOR BRUSH CONTROL ON UTILITY RIGHTS-OF-WAY IN THE EASTERN UNITED STATES. Down to Earth 19(1): 11-14, illus. Summer 1963. WR 110: 14

Tordon (4 amino-3,5,6-trichloropicolinic acid) was found to be more effective for killing broad-leaved plants than 2,4,5-T when evaluated a year after treatment. Most woody plants in the eastern United States were controlled with Tordon at 0.5-1 pound/100 gallons of water. Leaf kill was not as uniform nor as rapid on some species with sprays of Tordon as with sprays of 2,4,5-T and 2,4-D. Combinations of Tordon with phenoxy compounds gave more rapid and uniform leaf kill than Tordon used alone.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Gilbert, J. M. THE EFFECTS OF BROWSING BY NATIVE ANIMALS ON THE ESTABLISHMENT OF SEEDLINGS OF EUCALYPTUS REGNANS IN THE FLORENTINE VALLEY, TASMANIA. Australian Forestry 25(2): 116-121. 1961. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 24 Dec. 1962.] WR 110: 14

The animals causing most damage were two wallabies--Wallabia rufogrisea fruitica and Thyogale billardieri. Recovery from browsing and growth to a point beyond further danger of attack can be very rapid.--Courtesy/ Frank M. Johnson.

Koehler, W. WILD GAME PRODUCTION AND HARVESTING METHODS IN SOME INTENSIVELY MANAGED EUROPEAN FORESTS. World Forestry Congr. Proc. 5(3): 1800-1806. 1960 [1962]. [From Bibliog. Agr. 27(2), 1963.] WR 110: 14

"Chiefly Germany."

NW Forest Pest Action Council. (Western Forestry & Conserv. Assoc., 712 U. S. Natl. Bank Bldg., Portland 4, Oreg.) THERE'S TROUBLE IN THE WOODS! NW Forest Pest Action Council. 14 p., illus. [1963.] WR 110: 14

Each year in Oreg. and Wash. animals destroy timber (by eating seeds and seedlings) which could give jobs to 2,660 people and build 20,000 homes. Elk, deer, bear, rabbits, and rodents are the chief offenders.

Pavlov, V. M. [TAKING ACCOUNT OF WILD GAME IN FOREST MANAGEMENT.] Lesn. Khoz. 10: 74-75. Oct. 1962. [From Bibliog. Agr. 27(3), 1963. In Russian.] WR 110: 14

Schreiber, A. [A STUDY OF THE APPLICATION OF GAME REPELLENTS BY HELICOPTER.] Allg. Forst.-U. Jagdztg. 133(11): 259-267. Nov. 1962. [From Bibliog. Agr. 27(3), 1963. In German with English summary.] WR 110: 14

Swift, L. W. WILDLIFE MANAGEMENT AND PROTECTION IN THE FORESTS OF THE UNITED STATES. World Forestry Congr. Proc. 5(3): 1794-1800. 1960 [1962]. [From Bibliog. Agr. 27(2), 1963.] WR 110: 14

Turček, F. J. [DAMAGE TO SLOVAKIAN FORESTS THROUGH CLETHRIONOMYS GLAREOLUS IN 1959.] Z. angew. Zool. (Berlin) 47(4): 449-456, illus. 1960. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 1963. In German.] WR 110: 14

Courtesy/ Frank M. Johnson.

Weidermann, K. [FENCES FOR FOREST PROTECTION ESTABLISHED WITH HIGHER ECONOMIC USAGE.] Sozialist. Forstwirt. 12(5): 145-147, 151. May 1962. [From Bibliog. Agr. 27(1), 1963. In German.] WR 110: 15
"For control of wildlife damages."

STRIPPED LAND & MISCELLANEOUS HABITATS

Tennessee Valley Authority. AN APPRAISAL OF COAL STRIP MINING. Tenn. Valley Authority (Knoxville). 13 p. Feb. 1963. WR 110: 15
Through 1961, strip mining in the eastern U. S. had involved about 500,000 acres, and about half of this area had been reclaimed, chiefly by reforestation. Seven eastern states have reclamation laws, generally requiring permits and performance bonds from mining firms. Typical revegetation costs average $50/acre, depending on use to which land is to be put after restoration.

MAMMALS--GENERAL

Edwards, Robert L. (Commercial Fisheries Biol. Lab., Washington, D. C.) OBSERVATIONS ON THE SMALL MAMMALS OF THE SOUTHEASTERN SHORE OF HUDSON BAY. Canadian Field-Nat. 77(1): 1-12, 2 figs., 1 pl. Jan.-Mar. 1963. WR 110: 15
Based on collecting trips in 1950, 1953 and 1954, an annotated list of 17 spp. of mammals is given. In 1950, more than 600 trap-nights yielded neither lemmings nor voles; in 1953 voles were abundant and easily captured. Ecological information is included in the paper.

Krott, Peter. (Kleinsolk, Steinmark, Austria.) NEUE WEGE ZU EINER BESSEREN KENNTNIS VOM LEBEN DER SÄUGETIERE. [NEW METHODS FOR A BETTER KNOWLEDGE OF THE LIVES OF MAMMALS.] Säugetierk. Mitteil. 10(2): 49-61, illus. 1 Apr. 1962. [From J. Mammal. 44(1), 1963. (In German).] WR 110: 15

Merriam, H. Gray. (Univ. Texas, Austin.) AN UNUSUAL FOX : WOODCHUCK RELATIONSHIP. J. Mammal. 44(1): 115-116. Feb. 1963. WR 110: 15
A report of two instances of foxes and woodchucks believed to have used the same burrow simultaneously. In one case a litter of young was reared by the fox while an adult woodchuck was present. In the other case a family each of of foxes and woodchucks occupied the burrow at the same time. Upon excavation of the latter burrow, it was noted that the different species occupied burrow branches separated from the main burrow.

Niekerk, J. W. van, and U. de V. Pienaar. ADAPTATIONS OF THE IMMOBILIZING TECHNIQUE TO THE CAPTURE, MARKING AND TRANSLOCATION OF GAME ANIMALS IN THE KRUGER NATIONAL PARK. Koedoe (Pretoria) 5: 137-143, 6 pls. 1962. [From J. Mammal. 44(1), 1963.] WR 110: 15

Romankowowa, Anna. (Inst. Plant Protection, Poznań, Poland.) COMPARATIVE INVESTIGATION OF THE SKELETON OF THE HYOID APPARATUS IN POLISH INSECTIVORA AND RODENTIA. Acta Therioligica 6(2): 11-31, 21 figs. 10 July 1962. [In English with Polish summ.] WR 110: 15
Investigations on 5 spp. of 3 genera of Insectivora and 17 spp. of 11 genera of Rodentia.

Will, Raymond L. (Ill. Dept. Conserv., Macomb.) COMPARATIVE METHODS OF TRAPPING SMALL MAMMALS IN AN ILLINOIS WOODS. Trans. Ill. Acad. Sci. 55(1): 21-34, 2 figs. 1962. WR 110: 15
Peromyscus leucopus noveboracensis were live trapped, marked and released on a 13.9-acre plot; then a centrally located 1-acre area was snap trapped. Eleven individuals were caught in the live trapping, 6 in the first 3 days of snap trapping. Population estimates from snap trapping would be much inflated, the exaggeration ranging from 300% to 1200% depending on whether travels determined in live trapping were used to adjust densities on one or both plots. Some data are given also for Blarina brevicauda and Tamias striatus.--Lucille F. Stickel.

MAMMALS--FAUNAS AND MANUALS

Alvarez, Ticul. (Univ. Kans., Lawrence.) THE RECENT MAMMALS OF TAMAULIPAS, MEXICO. Univ. Kans. Publ., Museum Nat. Hist. 14(15): 363-473, 5 figs. 20 May 1963. WR 110: 16

The climatic characteristics and the biotic provinces of the area are briefly described. There is a short discussion on conservation of mammals. Establishment of refuges is recommended. Included are accounts of 146 species and races reported for Tamaulipas, the northeasternmost state of Mexico. Distribution in Tamaulipas and records of occurrence are given for the various species and races. There are also some comments on taxonomy, ecology, and life history of various mammals.

Cronan, John M., and Albert Brooks. CHECKLIST OF RHODE ISLAND MAMMALS. Narragansett Naturalist 6(1): 12-15, illus. 1963. WR 110: 16

Eighty-six forms of recent mammals are listed including 24 that have occurred in the past or may be recorded in the future.

Hall, E. Raymond, and Walter W. Dalquest. (Univ. Kans., Lawrence.) THE MAMMALS OF VERACRUZ. Univ. Kans. Publ., Museum Nat. Hist. 14(14): 165-362, 2 figs. 20 May 1963. WR 110: 16

A total of 160 species of mammals was recorded. In addition to locality records, information is given on life history and behavior of most species.

Halloran, Arthur F. (Wichita Mountains Wildl. Refuge, Cache, Okla.) NATIONAL ELK REFUGE MAMMAL NOTES. Proc. Okla. Acad. Sci. 42: 264-268. 1962. WR 110: 16

An annotated list of 32 spp. of mammals observed on the National Elk Refuge, Jackson Hole, Wyoming.

Siddiqi, M. S. (Zool. Surv. Dept., Karachi, Pakistan.) CHECKLIST OF MAMMALS OF PAKISTAN WITH PARTICULAR REFERENCE TO THE MAMMALIAN COLLECTION IN THE BRITISH MUSEUM (NATURAL HISTORY), LONDON. Biologia (Pakistan) 7(2): 93-225. 1961. [From Biol. Abstr. 41(3), 1963.] WR 110: 16

The entire literature before 1947 and a good deal after this date deals with British India as a whole. The present checklist has been prepared as the first step towards the preparation of a comprehensive fauna of Pakistan. In addition to comprehensive keys and actual measurements of the specimens available, detailed information regarding distribution and collecting centers of the various species has been given.--From abstr. by C. B. Curtin.

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Altner, Helmut. ÜBER DIE VERBREITUNG EINIGER KLEINSÄUGER IM RHEINLAND NACH GEWÖLLANALYSEN. [ON THE DISTRIBUTION OF SOME SMALL MAMMALS IN THE RHINELAND BASED ON HAIR ANALYSES.] Säugetierk. Mitteil. 10(1): 13-17. 1 Feb. 1962. [From J. Mammal. 44(1), 1963. (In German).] WR 110: 16

Pelikán, Jaroslav, and Jan Zejda. COMPARISON OF TWO METHODS OF ESTIMATING SMALL MAMMAL POPULATIONS. Zool. Listy, Folia Zoologica 9(3): 227-242. 1962. [From J. Mammal. 44(1), 1963.] WR 110: 16

Siroechkovskii, E. E. [BIOLOGICAL GROUPS OF DESERT ANIMALS, THEIR HABITAT PATTERNS AND BIOGEOGRAPHICAL MAPPING.] Voprosy Geog. 48: 103-120. 1960. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 3D28. Transl. of Russian abstr.] WR 110: 16

MAMMALS--PARASITES AND DISEASES

Lofton, C. B., S. M. Morrison, and P. D. Leiby. (Colo. State Univ., Fort Collins.) THE ENTEROBACTERIACEAE OF SOME COLORADO SMALL MAMMALS AND BIRDS, AND THEIR POSSIBLE ROLE IN GASTROENTERITIS IN MAN AND DOMESTIC ANIMALS. Zoonoses Res. 1(15): 227-293. 31 Dec. 1962. WR 110: 17

Of 589 small mammals collected in 9 counties of Colo., 15 (2.5%) yielded Salmonella isolations and 14 (2.4%) yielded Escherichia coli serotypes known to be pathogenic to man. Of 127 birds of 7 spp. collected, 8 birds of 3 spp. yielded Salmonella and 1 yielded a pathogenic E. coli.--From summ.

Marchette, Nyven J., Robert W. Sidwell, Paul S. Nicholes, and John B. Bushman. (Inst. Medical Res., Kuala Lumpur, Federation of Malaya.) STUDIES ON INFECTIOUS DISEASES IN WILD ANIMALS IN UTAH. III. EXPERIMENTAL Q FEVER IN WILD VERTEBRATES. Zoonoses Res. 1(18): 321-339, 1 fig. 31 Dec. 1962. WR 110: 17

Ten spp. of wild rodents and one sp. of cottontail, Citellus leucurus, Perognathus parvus, Dipodomys ordii, D. microps, Reithrodontomys megalotis, Peromyscus crinitus, P. maniculatus, P. truei, Neotoma lepida, Microtus montanus and Sylvilagus audubonii were uniformly susceptible to subcutaneous infection with Coxiella burnetii, but the infection was seldom fatal. The great susceptibility of wild rodents to Q fever and the long persistence of C. burnetii in their blood and tissues indicate that they may play an important role in maintaining and transmitting Q fever in nature. A bibliography of 40 titles is included.--From summ.

Marchette, Nyven J., John B. Bushman, Dale D. Parker, and E. Elmer Johnson. (Inst. Med. Res., Kuala Lumpur, Federation of Malaya.) STUDIES ON INFECTIOUS DISEASES IN WILD ANIMALS IN UTAH. IV. A WILD RODENT (PEROMYSCUS SPP.) PLAGUE FOCUS IN UTAH. Zoonoses Res. 1(19): 341-361, 1 fig. Dec. 1962. WR 110: 17

Pasteurella pestis was isolated from Peromyscus truei and P. maniculatus in the midst of the terminal phase of a wild Peromyscus plague outbreak in the Deep Creek Mountains of Utah. No drastic change in the rodent population of the area could be demonstrated.--From summ.

SHREWS, MOLES, BATS

Crespo, Jorge A., Jose M. Vanella, Benjamin D. Blood, and Jorge M. De Carlo. OBSERVACIONES ECOLÓGICAS DEL VAMPIRO DESMODUS R. ROTUNDUS (GEOFFROY) EN EL NORTE DE CÓRDOBA. [ECOLOGICAL OBSERVATIONS OF THE VAMPIRE DESMODUS R. ROTUNDUS (GEOFFROY) IN NORTHERN CÓRDOBA.] Rev. Mus. Argentino Cien. Nat. "Bernardino Rivadavia," Buenos Aires, Cien. Zool. 6(4): 131-160, 4 pls. Dec. 1961. [From J. Mammal. 44(1), 1963. (In Spanish).] WR 110: 17

Gould, Edwin. EVIDENCE FOR ECHOLOCATION IN SHREWS. Ph.D. thesis, Tulane Univ. 122 p. 1962. [From abstr. in Dissertation Abstr. 23(7), 1963.] WR 110: 17

Caged shrews (Sorex of 3 spp.) were trained to find a platform and to jump down onto it. They were later unable to find the platform, or found it only with great difficulty, when their ears were plugged. They found it readily when their ears were sham-plugged. The shrews while searching emitted sounds within the frequency range of 30-60 kc. Echolocation was suspected but not established.

Kepka, Otto. ÜBER DIE VERBREITUNG EINIGER FLEDERMÄUSE IN DER STEIERMARK. [ON THE DISTRIBUTION OF SOME BATS IN STEIERMARK (SOUTHEAST AUSTRIA).] Mitteil. Naturwiss. Ver. Steiermark (Graz) 91: 58-76. 1961. [From J. Mammal. 44(1), 1963. (In German).] WR 110: 17

Krzanowski, Adam. WYNIKI ROZWIESZENIA SKRZYNEK DLA NIETOPERZY W BIAŁOWIESKIM PARKU NARODOWYM. [THE RESULTS OF ERECTING BOXES FOR BATS IN THE NATIONAL PARK OF BIALOWIEŻA.] Chrońmy Przyrode Ojczysta 17(4): 29-32, 56. July-Aug. 1961. [In Polish with English summ.] WR 110: 18

No utilization by bats of 300 boxes erected for these mammals was noted during 3 years of study. However, all of "suitable" boxes were occupied by birds--mostly Muscicapa hypoleuca.

McNab, Brian K., and Peter Morrison. (Univ. Fla., Gainesville.) OBSERVATIONS ON BATS FROM BAHIA, BRAZIL. J. Mammal. 44(1): 21-23. Feb. 1963. WR 110: 18

Abstract: These notes describe some observations on the relative abundance, colony sites, behavior and feeding habits of eleven species of bats from the state of Bahia, Brazil. (Phyllostomus hastatus, P. discolor, Glossophaga soricina, Sturnira lilium, Vampyrops lineatus, Chiroderma villosum, Artibeus lituratus, A. jamacensis, Myotis nigricans, Molossus major and Molossops planirostris.)

Novick, Alvin. (Yale Univ., New Haven, Conn.) ORIENTATION IN NEOTROPICAL BATS. II. PHYLLOSTOMATIDAE AND DESMODONTIDAE. J. Mammal. 44(1): 44-56, 12 figs. Feb. 1963. WR 110: 18

The orientation sounds of Chilonycteris rubiginosa, C. personata, Pteronotus, Macrotus, Glossophaga, Leptonycteris, Artibeus (Phyllostomatidae), and Desmodus (Desmodontidae) were analyzed for frequency, frequency pattern, and duration. All of these bats produce ultrasonic orientation pulses of both a frequency modulated and harmonic pattern.--From abstr.

Polivka, J. B. EFFECTIVE MOLE CONTROL WITH CHEMICALS. Ohio Farm & Home Res. 48(2): 26, 1 fig. Mar.-Apr. 1963. WR 110: 18

Aldrin, dieldrin, endrin and heptachlor at rates of 2-3 pounds per acre effectively restricted mole activity in turf 4 years after the insecticides were applied. Similar results were obtained with chlordane applied at 5 pounds per acre and DDT at 25 pounds per acre.

Serafińska, Janina. RYJOWKI -- ZWIERZETA NIE ZNANE. [SHREWS -- LITTLE KNOWN MAMMALS.] Chrońmy Przyrode Ojczysta 17(5): 10-16, 53, 2 figs. Sept.-Oct. 1961. [In Polish with English summ.] WR 110: 18

Notes on the 4 spp. of Sorex found in Poland stressing their economic value (Sorex araneus, S. alpinus, S. minutus and S. caecutiens).

Shillito, Joy F. (= Mrs. J. Babington). (195 Harborough Ave., Sheffield 2, England.) FIELD OBSERVATIONS ON THE GROWTH, REPRODUCTION AND ACTIVITY OF A WOODLAND POPULATION OF THE COMMON SHREW SOREX ARANEUS L. Proc. Zool. Soc. London 140(1): 99-114, 8 figs. Feb. 1963. WR 110: 18

Abstract: Previous work on shrews is reviewed and the methods used in this study are described. As a result of marking and recapturing shrews in a small area of mixed woodland, some new information on the ecology of shrews has been obtained, and previous observations on shrew biology have been confirmed. Growth of shrews progresses steadily until the winter when it is reduced until the spring molt. Females have on average 2 litters of from 4 to 6 young and the breeding season extends from April to July. The population can be divided into juveniles, subadults, and adults using differences in pelage and weight. Peak periods of activity occur in early morning and late evening with a slight increase in activity in late afternoon in the summer.

Skoczeń, Stanisław. OCHRONA KRETA W POLSCE. [THE PROTECTION OF THE EUROPEAN MOLE IN POLAND.] Chrońmy Przyrode Ojczysta 18(2): 16-19, 56. Mar.-Apr. 1962. [In Polish with English summ.] WR 110: 18

Despite protective ordinances the 10-year average annual take of moles in post-war Poland amounted to 157,530. Licensing of catches and slashing of prices with a simultaneous rise of the demand for quality pelts have served to halt the exploitation of moles.

Skoczeń, Stanisław. (Coll. Agr., Kraków, Poland.) AGE STRUCTURE OF SKULLS OF THE MOLE, TALPA EUROPAEA LINNAEUS 1758 FROM THE FOOD OF THE BUZZARD (BUTEO BUTEO L.). Acta Theriologica 6(1): 1-9. 30 June 1962. [In English with Polish summ.] WR 110: 19

Of 302 skulls examined, 86.4% were from moles less than one year of age. This ratio is relatively constant for different years and for different times of the day when moles were caught.

Tamsitt, J. R., and Darío Valdivieso. NOTAS SOBRE ACTIVIDADES NOCTURNAS Y ESTADOS DE REPRODUCCIÓN DE ALGUNOS QUIRÓPTEROS DE COSTA RICA. [NOTES ON THE NOCTURNAL ACTIVITIES AND REPRODUCTION OF SOME COSTA RICAN BATS.] Rev. Biol. Trop. 9(2): 219-225. Dec. 1961. [From J. Mammal. 44(1). 1963. (In Spanish).] WR 110: 19

RABBITS AND PIKAS

Bookhout, Theodore A. (Cusino Wildl. Expt. Sta., Shingleton, Mich.) SNOWSHOE HARE HABITS. Mich. Conserv. 32(1): 10-16, illus. Jan.-Feb. 1963. WR 110: 19

Information is given on habitat and breeding biology of the snowshoe hare. A female may produce three litters and about 9 young/year. Mating starts in early April, and hunting can continue into March, without killing of pregnant females. Snowshoe hares and deer occur together during yarding of the deer and eat the same foods to some extent. The competition presented by hares on deer range is considered negligible.

Bull, P. C. (Dept. Sci. & Industrial Res., Wellington, New Zealand.) POPULATION DYNAMICS OF THE WILD RABBIT ORYCTOLAGUS CUNICULUS (L.). Science Review 20(2): 23-26. [1963.] WR 110: 19

Factors influencing rates of reproduction and mortality are discussed. These include intra-specific competition, weather, parasites, disease, predation, food, cover, and living conditions.

Conaway, C. H., H. M. Wight, and K. C. Sadler. (Univ. Mo., Columbia.) ANNUAL PRODUCTION BY A COTTONTAIL POPULATION. J. Wildl. Mgmt. 27(2): 171-175, 1 fig. Apr. 1963. WR 110: 19

Abstract: Adult ♀♀ in a cottontail (Sylvilagus floridanus) population produced seven or eight litters during the 1961 breeding season. A synchrony of the conception dates was maintained throughout the breeding season. Data about ovulation rate, prenatal mortality, and litter size for each litter are presented. The first litter was smallest, averaging about three young, and the remaining litters ranged between five and six young. The last four litters may be slightly smaller than the second and third litters of the season. The total annual production of young by an adult ♀ would be approximately 35.

Dorney, Robert S. (Univ. Wis. Center, Green Bay.) HELMINTH INFECTIONS IN WINTERING COTTONTAILS. J. Wildl. Mgmt. 27(2): 175-179. Apr. 1963. WR 110: 19

Abstract: At monthly intervals in the winters of 1959-60 and 1960-61, 161 fecal pellet groups of the cottontail (Sylvilagus floridanus) were collected near Green Bay, Wisconsin, and examined for helminth ova. Ninety-eight percent of the samples contained Obeliscoides (stomach worm) ova and 23 percent hexacanth embryos of the tapeworm Cittotaenia. In April, overwintering pellets were again examined microscopically. Developing stomach worm ova were noted, confirming their survival over winter. Habitat manipulation to encourage segregation of cottontails into distinct summer and winter ranges to reduce parasitic infections is proposed. Joint study of ecological sanitation techniques by parasitologists and wildlife ecologists is recommended.

Gordon, Charles. SOUTH DAKOTA'S LONG-EARED MILLIONAIRE. S. Dak. Conserv. Digest 30(1): 14-16, illus. Jan.-Feb. 1963. WR 110: 20

The jackrabbit is South Dakota's most important furbearer and its fur is valued at more than one million dollars annually. Carcasses are also sold to mink ranchers for mink food. Hunting of rabbits can be profitable. One S. Dakota hunter bagged 800 rabbits in one season and sold them for an average of 75 cents each.

Grodhaus, Gail, David C. Regnery, and Ian D. Marshall. (Calif. State Dept. Public Health, Berkeley.) STUDIES IN THE EPIDEMIOLOGY OF MYXOMATOSIS IN CALIFORNIA. II. THE EXPERIMENTAL TRANSMISSION OF MYXOMATOSIS IN BRUSH RABBITS (SYLVILAGUS BACHMANI) BY SEVERAL SPECIES OF MOSQUITOES. Am. J. Hyg. 77(2): 205-212. Mar. 1963. WR 110: 20

Mosquito transmission of myxomatosis from infected Sylvilagus bachmani to normal S. bachmani and Oryctolagus cuniculus can be readily achieved by the technique of interrupted feeding. Efficient transmission was obtained with 5 of 6 spp. of mosquitoes used. Anopheles freeborni has been incriminated as a vector of myxomatosis in Calif.--From summ.

Holler, Nicholas R. SOCIAL BEHAVIOR OF THE SWAMP RABBIT (SYLVILAGUS AQUATICUS). M. S. thesis, Univ. Mo. vii + 141 p., 9 figs. 1963. WR 110: 20

Detailed descriptions were given of rabbit behavior patterns, and social connotations of the behavior were deduced. The basic behavior patterns were named as follows: facing off, dislodgement, aggressive chase, male dash, jump sequence, following, reproductive chase, and copulation. Interactions between animals of the same sexes consisted of displays of dominance and subordination. Males organized a linear dominance hierarchy. Females appeared to be tolerant of each other and localized their movements to one of two areas in the pen, resulting in the formation of two groups.--From summ.

Holler, Nicholas R., Thomas S. Baskett, and John P. Rogers. (Univ. Mo., Puxico.) REPRODUCTION IN CONFINED SWAMP RABBITS. J. Wildl. Mgmt. 27(2): 179-183, 1 fig. Apr. 1963. WR 110: 20

Abstract: Four ♀ swamp rabbits (Sylvilagus aquaticus), confined in a 2-acre pen, produced eight litters. Apparently, this is the first record of breeding in confinement for the species. Swamp rabbits may produce four litters per year in southern Mo. The gestation period was 36-38 days with six of eight pregnancies being 37 days. Nests were built as much as 3 days before parturition. The vegetation immediately surrounding the nest was utilized, resulting in good camouflage. Unlike the nest of a cottontail, two-thirds of a swamp rabbit's nest is above ground.

Joubert, L., E. Leftheriotis, M.-T. Fayet, and J. Oudar. ÉTUDE COMPARÉE DES PROPRIÉTÉS PATHOGÈNES, ANTIGÈNES, IMMUNIGÈNES ET ALLERGÈNES DES ULTRAVIRUS COMPLETS ET ACTIFS DE LA MYXOMATOSE ET DE LA FIBROMATOSE DU LAPIN. [COMPARISON OF THE VIRUSES OF MYXOMATOSIS AND OF FIBROMA IN RABBITS.] Bull. Soc. Sci. Vét. Lyon 64: 209-275. 1962. [From Vet. Bull. 32(11), 1962. In French.] WR 110: 20

The myxoma virus had higher pathogenicity (average $I.D._{50} = 10^{-7}$ compared with 10^{-8} for fibroma virus) and antigenicity.

Marsden, Halsey M., and C. H. Conaway. (Univ. Mo., Columbia.) BEHAVIOR AND THE REPRODUCTIVE CYCLE IN THE COTTONTAIL. J. Wildl. Mgmt. 27(2): 161-170, 1 fig. Apr. 1963. WR 110: 20

Abstract: Observations of behavior during all phases of the reproductive cycle were made on a small population of individually marked cottontails (Sylvilagus floridanus) confined in a large field enclosure. The peak period of social activity was found to be between 6 and 8 PM, and the onset of evening activity did not vary with increasing day length. Nine basic types of adult social interactions are described. Evidence is presented for a synchronized first, and six subsequent, breeding periods. A 7-day behavioral rhythm is present during the onset of breeding and the first pregnancy but is apparently absent following postpartum periods, possibly as a result of behavioral changes

in the nursing females. The onset of reproductive activity was February 14-15, and by August 15 the population showed reproductive regression. The study population was closely synchronized with the natural population surrounding the enclosures. Brief periods of severe weather reduced reproductive activity markedly, and a brief period of snow cover probably delayed the onset of breeding. The series of events during the postpartum estrous period is described. This series, from final nest preparation through birth and mating to an unreceptive condition of the female, lasts less than 2 hours. Six pregnancies were timed and the gestation periods were between 26 and 28 days.

Marshall, Ian D., David C. Regnery, and Gail Grodhaus. (Australian Natl. Univ., Canberra, A.C.T., Australia.) STUDIES IN THE EPIDEMIOLOGY OF MYXOMATOSIS IN CALIFORNIA. I. OBSERVATIONS ON TWO OUTBREAKS OF MYXOMATOSIS IN COASTAL CALIFORNIA AND THE RECOVERY OF MYXOMA VIRUS FROM A BRUSH RABBIT (SYLVILAGUS BACHMANI). Am. J. Hyg. 77(2): 195-204, 1 fig. Mar. 1963. WR 110: 21

Investigations carried out during outbreaks of myxomatosis in Calif. domestic rabbits during 1959 incriminated the brush rabbit (Sylvilagus bachmani) as a natural reservoir of the disease. It seems likely that myxomatosis was enzootic in Calif. wild rabbits long before the first recorded outbreaks of the disease in domestic rabbits at San Diego in 1928.--From summ.

Marshall, Ian D., and David C. Regnery. (Australian Natl. Univ., Canberra, A.C.T., Australia.) STUDIES IN THE EPIDEMIOLOGY OF MYXOMATOSIS IN CALIFORNIA. III. THE RESPONSE OF BRUSH RABBITS (SYLVILAGUS BACHMANI) TO INFECTION WITH EXOTIC AND ENZOOTIC STRAINS OF MYXOMA VIRUS, AND THE RELATIVE INFECTIVITY OF THE TUMORS FOR MOSQUITOES. Am. J. Hyg. 77(2): 213-219. Mar. 1963. WR 110: 21

McIlwaine, C. Patricia. (Dept. Sci. & Industrial Res., Lower Hutt, New Zealand.) REPRODUCTION AND BODY WEIGHTS OF THE WILD RABBIT ORYCTOLAGUS CUNICULUS (L.) IN HAWKE'S BAY, NEW ZEALAND. New Zealand J. Sci. 5(3): 325-341, 2 figs. Sept. 1962. WR 110: 21

A comparison of the results obtained in 1950-2 as reported by Watson [see WR 91: 53] with those for the period 1952-9. The mean number of corpora lutea per ♀ was 5.77 and the seasonal variation for 1952-9 was similar to that of 1950-2. In comparison with 1950-2, there was a significant increase in the number of embryos resorbed and it is estimated that 47% of litters were lost in entirety. Rabbits from 1952-9 were on the average 82 grams heavier than those of 1950-2.--From summ.

Mohr, Carl O., and Lowell Adams. (Univ. Calif., Berkeley.) RELATION OF FLEA INFESTATIONS TO SPACING BETWEEN COTTONTAIL RABBITS. J. Wildl. Mgmt. 27 (1): 71-76, 1 fig. Jan. 1963. WR 110: 21

Abstract: Examination of 266 rabbits (Sylvilagus floridanus) revealed that 75 percent of those having neighbors within a radius of from 1 to 10 yards were infested by fleas, Cediopsylla simplex, whereas 161 examinations indicated that only 48 percent of those with neighbors at a distance of from 20 to 340 yards were infested. It is suggested that the greater infestation rate in the more closely spaced rabbits is caused by more frequent transfer of parasites among hosts living close together, and the lesser infestation is induced by fragmentation of habitat units of hosts living farther apart, resulting in loss of parasites in adjacent uncongenial habitat. On rabbits living close together or caught only once, the prevalence of infestation of females was almost significantly greater at the 0.05 level than that of males. Comparative overall rates of infestation on male and female cottontails in Lee County, Illinois, were not significantly different at the sampling intensity attained.

Musser, E. G. (2193 Chestnut St., Camp Hill, Pa.) RABBIT MULTIPLICATION. Pa. Game News 34(3): 52-55, 5 figs. Mar. 1963. WR 110: 21

Through habitat improvement, the cottontail population on a 66.5 acre study area was increased from 1/6.6 acres to 1/acre during a 2-year period. The study area was a farm, abandoned 25 years before initiation of the study. The chief improvement practice was the establishment of food strips. Treatment included: plowing, disking, liming, fertilizing and seeding.

Thompson, Harry V. RABBIT CONTROL FROM THE SCIENTIST'S VIEWPOINT. Scottish Agr. 40(4): 173-176. Spring 1961. [From J. Mammal. 44(1), 1963.] WR 110: 22

RODENTS--MISCELLANEOUS

Allred, Dorald M., and D. Elden Beck. (Brigham Young Univ., Provo, Utah.) ECOLOGICAL DISTRIBUTION OF SOME RODENTS AT THE NEVADA ATOMIC TEST SITE. Ecology 44(1): 211-214. Winter 1963. WR 110: 22

Live traps were operated a total of 18,498 trap-nights in 5 major plant communities in Nev. Total plant cover and its average height were closely related to species occurrence and animal abundance.

Alvarez, T. SINOPSIS DE LAS ESPECIES MEXICANAS DEL GÉNERO DIPODOMYS. [BRIEF REVIEW ON MEXICAN SPECIES OF THE GENUS DIPODOMYS.] Rev. Soc. Mex. Hist. Nat. 21(2): 391-424, illus. 1960. [From Biol. Abstr. 41(3), 1963. (In Spanish).] WR 110: 22

Baker, J. R., Dennis Chitty, and Ellen Phipps. (Univ. Oxford, Oxford, England.) BLOOD PARASITES OF WILD VOLES, MICROTUS AGRESTIS, IN ENGLAND. Parasitology 53(1&2): 297-301, 1 fig. May 1963. WR 110: 22

Thirty-six of 70 Microtus agrestis captured near Oxford, England, between Jan. and July 1961 were infected with blood parasites--9 with Trypanosoma microti, 18 with Babesia microtia and 19 with Grahamella microti. Some had more than one species.--From summ.

Bakhtigozin, I. A. (Astrakhan Anti-Plague Sta., USSR.) [THE ACTION OF FLOOD AND PRECIPITATION IN APRIL AND MAY ON THE AUTUMNAL NUMBERS OF SMALL MURINE RODENTS IN THE VOLGA-AKHTUBINSK FLOOD PLAIN.] Zool. Zhur. 41(7): 1075-1082. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ. WR 110: 22

Work was done on the territory of Kharabali and Sassykol districts, Astrakhan region, in 1953. Censuses taken during 8 subsequent years show autumnal abundance of mice under conditions of flood-land of Volga-Akhtuba to depend not only upon level of spring flood but upon total amount of precipitation during Apr. and May.--From auth. summ. transl.

Büttner, H., and U. Schindler. [IS CHECK-TRAPPING OF MICE AND VOLES A DANGER TO HUMAN HEALTH?] Allgem. Forstzeit. 17(42): 670-672. 1962. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 8 Jan. 1963. In German.] WR 110: 22

Courtesy/ Frank M. Johnson.

Clarke, J. R. (Dept. Agr., Univ. Oxford, Oxford, England.) SOME FACTORS INFLUENCING REPRODUCTION IN THE VOLE (MICROTUS AGRESTIS). In: PROCEEDINGS OF THE SOCIETY FOR THE STUDY OF FERTILITY, 1962. J. Reproduction & Fertility 4 (2): 239-240. 1962. [From Biol. Abstr. 42(5), 1963.] WR 110: 22

Abstract.

Eisenberg, John F., and Donald E. Isaac. (Univ. British Columbia, Vancouver.) THE REPRODUCTION OF HETEROMYID RODENTS IN CAPTIVITY. J. Mammal. 44(1): 61-67, 1 fig. Feb. 1963. WR 110: 22

Abstract: By using large cages or a simultaneous encounter technique, several species of heteromyid rodents have been bred in captivity. The mating behavior of Dipodomys, although similar to Perognathus, is characterized by a prolonged mount. The data concerning gestation, parturition, maternal behavior and the maturation of the young are described and discussed, comparing 7 species from the genera Liomys, Perognathus, and Dipodomys. It is concluded that in some species of Dipodomys there is a definite trend toward lengthening their gestation period, reducing their litter size and producing more precocial young

Pullagar, P. J., P. A. Jewell, R. M. Lockley, and I. W. Rowlands. (Univ. London, London, England.) THE SKOMER VOLE (CLETHRIONOMYS GLAREOLUS SKOMERENSIS) AND LONG-TAILED FIELD MOUSE (APODEMUS SYLVATICUS) ON SKOMER ISLAND, PEMBROKESHIRE IN 1960. Proc. Zool. Soc. London 140(2): 295-314, 6 figs. Mar. 1963. WR 110: 23

Using the data from the grid trapping combined with a map of the distribution of the vole population on 720-acre Skomer, a figure between 17,000 and 27,000 was calculated as the population of voles. Nearly half of the animals captured were juveniles.

Getz, Lowell L. (Univ. Conn., Storrs.) A COMPARISON OF THE WATER BALANCE OF THE PRAIRIE AND MEADOW VOLES. Ecology 44(1): 202-207, 1 fig. Winter 1963. WR 110: 23

The ad libitum water consumption of Microtus pennsylvanicus was significantly greater than that of M. ochrogaster. M. ochrogaster was better able to adjust to a restricted water ration than was M. pennsylvanicus and was able to utilize a higher molarity of salt water than M. pennsylvanicus. M. ochrogaster, an inhabitant of relatively dry grasslands, appears better adapted to dry habitats than M. pennsylvanicus, an inhabitant of moist habitats.

Górecki, Andrzej, and Zofia Gebczyńska. (Jagiellonian Univ., Kraków, Poland.) FOOD CONDITIONS FOR SMALL RODENTS IN A DECIDUOUS FOREST. Acta Theriologica 6(10): 275-295, 3 figs. 15 Oct. 1962. [In English with Polish summ.] WR 110: 23

Food supplies of a climax Oak-Hornbeam forest available for small rodents were studied in the different phenological seasons of 1960-61. Food preferences and diurnal food consumption in Clethrionomys glareolus and Apodemus flavicollis were investigated. The diurnal consumption of energy by the bank vole amounts to 14.8 kg cal and for the field mouse 18.3 kg cal and for the whole community of small mammals with a density of 40 individuals per hectare to 625 kg cal. Thus, to survive 20 days small mammals need 12,500 kg cal.--From summ.

Haitlinger, Ryszard. (Coll. Agr., Wrocław, Poland.) MORPHOLOGICAL VARIABILITY IN APODEMUS AGRARIUS (PALLAS 1771). Acta Theriologica 6(8): 239-255, 4 figs. + 2 pls. 20 Dec. 1962. [In English with Polish summ.] WR 110: 23

Although this paper deals primarily with the morphology of the European field mouse there are treatments of the sex and age composition of the population studied during 1959-61. The life span does not exceed 1.5 years. There were more ♂♂ captured than ♀♀ (302 ♂♂:242 ♀♀) during this study.

Huminski, Stanisław. (Coll. Agr., Wrocław, Poland.) A HISTOLOGICAL PICTURE OF THE AUXILIARY GLANDS OF THE MALE SEXUAL APPARATUS IN THE FIELD VOLE (MICROTUS ARVALIS PALL.) DURING INVOLUTION. Zool. Polon. 11(1): 3-14, illus. 1961 [1962]. [From Biol. Abstr. 42(5), 1963. (In English) with Polish summ.] WR 110: 23

Jorgensen, Clive D. (Brigham Young Univ., Provo, Utah.) SPATIAL AND TIME DISTRIBUTION OF DIPODOMYS MICROPS OCCIDENTALIS WITHIN DISTINCT PLANT COMMUNITIES. Ecology 44(1): 183-187, 3 figs. Winter 1963. WR 110: 23

An attempt to correlate animal distribution with dominant vegetation height, plant species composition, percentage of plant cover, number of plants, and penetrometer results all failed. Correlation was evident between the distribution of total animals collected and that of the newly trapped animals. Two factors in the animals' distribution were evident. The first was a distinct border effect resulting from the trapping technique. The second was a variation in the distribution, resulting from a continuous death rate opposing a seasonal birth rate, both competing for equal expression on the population distribution. This resulted in a seasonal change illustrated by a series of uniformity curves.--From summ.

Klawitter, Ralph A., Jack Stubbs, and Frank M. Johnson. (SE Forest Expt. Sta., Asheville, N. C.) TESTS OF ARASAN 75-ENDRIN 50W RODENT REPELLENT ON SHUMARD AND SWAMP CHESTNUT OAK ACORNS. U. S. Forest Serv. Res. Note SE-4. 2 p. Feb. 1963. WR 110: 24

The tested repellent was effective only when alternate food supplies were unavailable. Test animals included: Sciurus carolinensis, Sigmodon hispidus and Peromyscus gossypinus.

Koshkina, T. V., and A. S. Khalansky. [ON THE REPRODUCTION OF THE LEMMING, LEMMUS LEMMUS, ON THE KOLA PENINSULA.] Zool. Zhur. Akad. Nauk SSSR 41(4): 604-615. Apr. 1962. [From J. Mammal. 44(1), 1963. In Russian with English summ. WR 110: 24

McNab, Brian K., and Peter Morrison. (Univ. Wis., Madison.) BODY TEMPERATURE AND METABOLISM IN SUBSPECIES OF PEROMYSCUS FROM ARID AND MESIC ENVIRONMENTS. Ecol. Monographs 33(1): 63-82, 26 figs. Winter 1963. WR 110: 24

Studies were made of the body temperatures of Peromyscus in relation to activity, body weight and ambient temperature. Measurements were made of the rate of metabolism in different ambient temperatures, and the thermal conductance of the pelt of desert subspecies was considered.

Mikhalap, O. N. [ECOLOGICAL CHARACTERISTICS AND NUMERICAL CHANGES IN SMALL RODENTS OF THE BELORUSSIAN POLES'YA.] Izvest. Akad. Nauk Belorussk. SSR. Ser. Biol. Nauki 3: 96-103. 1961. [From Biol. Abstr. 42(5). 1963, from Referat. Zhur., Biol., 1962, no. 15I233. Transl. of Russian (?) abstr. Original in Belorussian.] WR 110: 24

Newsom, Janet, and Dennis Chitty. (Ontario Agr. Coll., Guelph, Ontario, Canada.) HAEMOGLOBIN LEVELS, GROWTH AND SURVIVAL IN TWO MICROTUS POPULATIONS. Ecology 43(4): 733-738, 1 fig. Autumn 1962. WR 110: 24

An attempt to explain a decline in 1958 in numbers of the vole, Microtus agrestis. No evidence was found of a physiological abnormality that might explain decline.

Newson, Robin. (Ministry Agr., Fisheries & Food, Coypu Lab., Mille Cross Lane, Norwich, England.) DIFFERENCES IN NUMBERS, REPRODUCTION AND SURVIVAL BETWEEN TWO NEIGHBORING POPULATIONS OF BANK VOLES (CLETHRIONOMYS GLAREOLUS). Ecology 44(1): 110-120, 1 fig. Winter 1963. WR 110: 24

A comparative study conducted by intensive live-trapping of 2 populations of bank voles inhabiting a deciduous forest of southern England. Breeding continued through the winter on both areas, but it was more intense on one than the other. Numbers on both areas increased until mid-winter and then remained steady until spring. Survival rates differed on the two areas and in age and sex groups.--From summ.

Serafińska, Janina. POPIELICA I JEJ KREWNIACY. [THE FAT DORMOUSE AND ITS RELATIVES.] Chrońmy Przyrode Ojczysta 16(6): 15-25, 55, 6 figs. Nov.-Dec. 1960. [In Polish with English summ.] WR 110: 24

Notes on the comparative ecology of the 4 spp. of dormice found in Poland (Glis glis, Eliomys guercinus, Muscardinus avellanarius and Dryomys nitedula). All 4 forms are protected in Poland.

Shadowen, H. E. A LIVE-TRAP STUDY OF SMALL MAMMALS IN LOUISIANA. J. Mammal. 44(1): 103-108. Feb. 1963. WR 110: 24

One objective of the study was to determine the effect of controlled burning on small mammals. The mean home range of Peromyscus nuttalli was 1.31 acres on the control plot and 1.07 acres on the burned plot. The mean home range of Peromyscus gossypinus was 1.2 acres on the control plot and 0.74 acres on the burned plot. The highest trap-revealed densities for these two species were 2.79 Peromyscus nuttalli per acre and 1.22 Peromyscus gossypinus per acre. The burn on 23 February 1959 had a negligible effect on the small mammals and was followed by a decrease in trap-revealed rodents for less than a month.--From abstr.

Shtraus, U. [MUSCARDINUS AVELLANARIUS L. IN THE LATVIAN SSR.] Trudy Inst. Biol. Akad. Nauk Latviiskoi SSR 12: 233-236. 1959. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 6D427. Transl. of Russian abstr. Original (in Russian) with German summ.] WR 110: 25

A survey of manmade nesting sites for birds uncovered colonization of titmouse sites in mixed foliate plantings by M. avellanarius, as well as by small Sorex, and bats. Colonization of sites by these comprised on the average 18% during 1955 and 1957, from beginning of May to beginning of Nov.--From abstr.

Skvortsov, B. P. [AN ECOLOGICAL-ZOOLOGICAL SURVEY OF THE RODENTS OF SOME RAIONS OF CENTRAL ASIA AND THE NORTHWESTERN PART OF THE RUSSIAN SOVIET FEDERATED SOCIALIST REPUBLIC IN CONNECTION WITH NATURAL FOCI OF COMMUNICABLE DISEASE.] Zool. Zhur. 40(3): 427-433. 1961. [From Biol. Abstr. 42(5), 1963, from Referat. Zhur., Biol., 1962, no. 20E114. Transl. of Russian abstr. Original with English summ.] WR 110: 25

This is a list of about 18 species of rodents taken in the area of the Karmakchinsk raion of Kzyl-Ordinsk oblast in the summer of 1956. On the Karelian Isthmus, chiefly in the area of Priozersk, 10 spp. of rodents were observed including the Norway rat, the house mouse, Apodemus flavicollus, and so on. Listeria infections were found by A. I. Smirnov in the internal organs of a Norway rat and 3 specimens of C. glareolus.

Slater, J. V., C. T. Broughton, L. Hood, A. S. Egge, and J. L. Kallmeyer. YTTRIUM LOCALIZATION IN THE DESERT POCKET MOUSE PEROGNATHUS PENICILLATUS. Proc. Soc. Exptl. Biol. & Med. 108(1): 198-199. Oct. 1961. [From J. Mammal. 44(1), 1963.] WR 110: 25

Tokobaev, M. M. [HELMINTH FAUNA OF CITELLUS RELICTUS, ENDEMIC IN THE MOUNTAINS OF CENTRAL ASIA.] Zool. Zhur. 41(7): 1100-1103. 1962. [From Helminthol. Abstr. 32(1), 1963. In Russian with English summ.] WR 110: 25

Vaughan, Terry A. (Colo. State Univ., Fort Collins.) MOVEMENTS MADE BY TWO SPECIES OF POCKET GOPHERS. Am. Midland Nat. 69(2): 367-372, 1 fig. Apr. 1963. WR 110: 25

Abstract: Information is presented on dispersal movements made by valley pocket gophers, Thomomys bottae, and northern pocket gophers, T. talpoides, introduced into areas with which the animals were unfamiliar. Most long movements were made under snow cover. Thomomys talpoides dispersed from introduction sites more frequently and moved greater distances than did T. bottae. The mean distance moved by T. talpoides in one year was 785 feet, and the longest movement was 2590 feet. Comparable figures for T. bottae are 198 feet and 900 feet. The differences in dispersal abilities or tendencies between the species are probably basic behavioral distinctions which may be related to the differences in the environments occupied by the animals.

Ward, A. Lorin, and James O. Keith. (US F&WS, Denver 25, Colo.) FEEDING HABITS OF POCKET GOPHERS ON MOUNTAIN GRASSLANDS, BLACK MESA, COLORADO. Ecology 43(4): 744-749, 3 figs. Autumn 1962. WR 110: 25

Stomachs of 397 pocket gophers (Thomomys talpoides) were examined. In habitats where vegetation consisted of 50% grasses, 42% forbs and 8% shrubs the summer diet of gophers consisted of 6% grasses, 93% forbs and 1% shrubs; 74% of food was stems and leaves, and 26% was roots.--From summ.

RATTUS AND MUS

Beach, Frank A. (Univ. Calif., Berkeley.) REPRODUCTIVE ANATOMY AND MATING BEHAVIOR OF AN INTERSEX RAT. J. Mammal. 44(1): 57-61, 4 figs. Feb. 1963. WR 110: 25

This article describes the reproductive anatomy and behavior of a spontaneously occurring "intersex" rat. The clitoris was greatly hypertrophied and

contained an "os penis." Immediately ventral to this structure was a blind pouch giving an appearance of an infantile vagina. Irregular periods of cornification appeared in the vaginal smear. There was a bifurcated uterus with an inactive ovary on one side and an ovitestis on the other.--From abstr.

Bentley, E. W., L. E. Hammond, A. H. Bathard, and J. H. Greaves. SODIUM FLUORACETATE AND FLUORACETAMIDE AS 'DIRECT' POISONS FOR THE CONTROL OF RATS IN SEWERS. J. Hyg. (Cambridge) 59: 413-417. 1961. [From J. Mammal. 44(1), 1963.] WR 110: 26

Kim, T. A. [CONTRIBUTIONS TO THE ECOLOGY OF MUS MUSCULUS L. IN THE KYZYL-KUMY.] Nauch. Doklady Vysshei Shkoly Biol. Nauk 2: 39-42. 1960. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 6D425. Transl. of Russian abstr.] WR 110: 26

Rowe, F. P., E. J. Taylor, and A. H. J. Chudley. (Ministry Agr., Hook Rise, Tolworth, Surbiton, Surrey, England.) THE NUMBERS AND MOVEMENTS OF HOUSE-MICE (MUS MUSCULUS L.) IN THE VICINITY OF FOUR CORN-RICKS. J. Animal Ecol. 32(1): 87-97, 1 fig., 1 pl. Feb. 1963. WR 110: 26

During 18 Aug. 1959 - 22 May 1960 live-traps were operated at openings in enclosures around 4 corn-ricks, and 364 mice were trapped entering the ricks. At two ricks the entering mice were released inside the enclosure and at two they were killed. At threshing time the ricks had populations ranging from 680 to 1804 mice. Peak movement into the ricks was in Oct. There was little movement of mice away from the ricks before Dec., but thereafter the monthly catch increased steadily.--From summ.

Zapletal, Milan. (Czechoslovak Acad. Sci., Lidická 79, Brno.) O VOLBĚ NÁVNADY V BOJI PROTI POTKANU (RATTUS NORVEGICUS BERK.) V PODMÍNKACH ZEMĚDĚLSKÝCH OBJEKTŮ. [BAIT SELECTION IN RAT CONTROL UNDER CONDITIONS OF AGRICULTURAL ENTERPRISES.] Zool. Listy 11(1): 81-91. 1962. [In Czech with English summ.] WR 110: 26

Bait selection by rats (Rattus norvegicus) was tested for more than 50 different food items placed in 4600 heaps in rat habitat. It was found that the rats most readily consumed baits resembling products already in their environment. Density of the rat population influenced food selection, with less choice occurring in more dense populations. Since solid baits were moved by rats, use of loose baits was recommended. This helped make poison baits less accessible to desirable animals.

Zapletal, M. (Czechoslovak Acad. Sci., Lidická 79, Brno.) ZMĚNY V OSÍDLENÍ KOMPLEXNÍHO ZEMĚDĚLSKÉHO ZÁVODU KRYSOU POTKANEM (RATTUS NORVEGICUS) V LETECH 1957-1961. [CHANGES IN BROWN RAT (RATTUS NORVEGICUS) POPULATION OF A COMPLEX AGRICULTURAL ENTERPRISE IN 1957-1961.] Zool. Listy 11(4): 295-308, 12 figs. 1962. [In Czech with English summ.] WR 110: 26

Changes in rat populations resulting from control measures are contrasted in graph and description with changes produced by improved sanitation. Estimates of population density were direct counts made by walking through the farm buildings with a flashlight between 6:00 and 10:00 p.m.--L. F. Stickel.

SCIURIDS

Asher, William C. (Olustee, Fla.) SQUIRRELS PREFER CONES FROM FERTILIZED TREES. U. S. Forest Serv. Res. Note SE-3. 1 p. Feb. 1963. WR 110: 26

Cone losses from all causes during 1961-62 were significantly greater on the fertilized plots than the controls. It was concluded that insects and squirrels prefer cones from fertilized trees to those from unfertilized ones.

Caldwell, David K., and Melba C. Caldwell. GRAY SQUIRRELS LARCENOUSLY FEEDING AT CRACKER-VENDING MACHINES. J. Fla. Acad. Sci. 23(4): 285-288. 1961. [From J. Mammal. 44(1), 1963.] WR 110: 26

SCIURIDS--Continued

Dubrovskii, Yu. A. CHARACTERISTICS OF THE DISTRIBUTION OF YELLOW AND SMALL GROUND SQUIRRELS IN THE AREA OF THEIR JOINT HABITATION. 14 p. Aug. 1962. (Translation of Zool. Zhur. 40(12): 1868-1873. 1961.) [From Tech. Translations 9(4), 1963. Translation from Russian.] WR 110: 27
Distribution, ecology and population of ground squirrels.

Foreman, Darhl. THE NORMAL REPRODUCTIVE CYCLE OF THE FEMALE PRAIRIE DOG AND THE EFFECTS OF LIGHT. Anat. Record 142(3): 291-306. Mar. 1962. [From J. Mammal. 44(1), 1963.] WR 110: 27

Mead, C. GREY SQUIRREL. Trans. Suffolk Nat. Soc. 12: 137. 1962. [From J. Animal Ecol. 32(1), 1963.] WR 110: 27
Sciurus carolinensis has at last invaded Suffolk and has been reported from eleven woods in West Suffolk in 1961-62 and from one in East Suffolk in 1962.

Soldatova, A. N. (Moscow State Univ., USSR.) [THE EFFECT OF THE POPULATION DENSITY ON THE NATURE OF THE UTILIZATION OF HOME RANGES BY CITELLUS PYGMAEUS PALL.] Zool. Zhur. 41(6): 913-921. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 27
Direct observations on Citellus pygmaeus gave the possibility to find several differences in utilization of home ranges by these animals in the case of different population density. These differences consist in a change in area of home range, number of burrows visited by animal during a day, degree of overlapping of ranges and ratio of portions of home ranges one of which is used only by one while the other is utilized by 2 or several ground squirrels. Protection of home range takes place in all cases, it is only its mode which changes, i.e., portion used by one ground squirrel only is protected against all other animals of same sp., while animals utilizing a portion of territory jointly do not show aggressiveness towards each other, haunting other ground squirrel which come within this portion of territory.--Auth. summ. transl.

Surdaki, Stanisław. ZAGADNIENNIE OCHRONY SUSŁA W LUBELSZCZYŹNIE. [ON THE PROTECTION OF THE SPOTTED SOUSLIK IN THE PROVINCE OF LUBLIN.] Chrońmy Przyrode Ojczysta 18(6): 13-17, 57-58, 1 fig. Nov.-Dec. 1962. [In Polish with English summ.] WR 110: 27
Studies carried on in 1953-54 and 1961 indicate a decrease in Citellus suslicus. In 1961 they were found in only 81 of the 143 localities ascertained in 1954. Their numbers decreased from about 70,000 for 1954 to 20,000 in 1961.

BEAVER

Knudsen, George J. HISTORY OF BEAVER IN WISCONSIN. Wis. Conserv. Dept., Misc. Res. Rept. no. 7. ii + 15 p., mimeo. Feb. 1963. WR 110: 27
Wis. beaver populations during the pioneer period were wide-spread over the state, but were not as dense per unit area as they have been in recent years. The combination ruined habitat (through logging) and trapping reduced the beaver population to near extinction by 1900. Forest succession (to aspen) and beaver transplanting in the 1930's resulted in all-time highs in beaver populations by 1950. Declines in beaver populations are indicated for the period 1950-1960. The aspen lands are rapidly being replaced by timber stands less conducive to heavy beaver populations.--From auth. abstr.

Lavrov, L. S. [RESULTS OF AN INVESTIGATION OF COLONIES OF THE NORTHERN URAL BEAVER IN THE KONDA RIVER BASIN.] Tr. Voronezhsk. Gos. Zapovednika 12: 25-45. 1961. [From Biol. Abstr. 42(5), 1963, from Referat. Zhur., Biol., no. 15I264. Transl. of Russian abstr.] WR 110: 27

Lyarski, P. A. [CONTEMPORARY DISTRIBUTION OF BEAVER IN THE BASIN OF THE SOZHA RIVER WITHIN THE LIMITS OF THE MOGILEVSKII OBLAST'.] Izvest. Akad. Nauk Belorussk. SSR. Ser. Biol. Nauki 4: 123-128. 1961. [From Biol. Abstr. 42(5), 1963, from Referat. Zhur., Biol., 1962, no. 15I261. Transl. of Russian (?) abstr. Original in Belorussian.] WR 110: 27

Sanborn, Alvah W. (Pleasant Valley Sanctuary, Lenox, Mass.) THE RETURN OF THE NATIVE--THE BEAVER IN THE BERKSHIRES. Mass. Audubon 47(3): 124-126, illus. Spring 1963. WR 110: 28

For more than 170 years there were no beavers in Berkshire County, Mass. Stocking was first attempted in 1928 and the animals are now so abundant that more than 300 were trapped in the county in 1962.

MUSKRAT AND NUTRIA

Andone, G., C. C. Popescu, and V. Nesterov. [THE MUSKRAT IN THE RUMANIAN PEOPLE'S REPUBLIC WITH A SPECIAL CONSIDERATION OF ITS PRESENCE IN THE DANUBE DELTA.] Bucharest Inst. Cercet. Forest. Studii si Cercet. 22A: 27-55, map. 1961. [From Bibliog. Agr. 27(2), 1963. In Rumanian with English summ.] WR 110: 28

"In relation to forest damages."

Errington, Paul L., Roger J. Siglin, and Robert C. Clark. (Siglin: Iowa State Univ., Ames.) THE DECLINE OF A MUSKRAT POPULATION. J. Wildl. Mgmt. 27(1): 1-8, 1 fig. Jan. 1963. WR 110: 28

Abstract: Responses of a high muskrat (Ondatra zibethicus) population to a deteriorating habitat were studied at Goose Lake, a 135-acre central Iowa marsh, during 1961. Apart from certain "cyclic" implications in the situation, the most remarkable findings from this particular study relate to the indifferent breeding performance of the muskrats from spring to midsummer, followed by a late-breeding spurt in August and September after ear corn in fields adjacent to the marsh became utilized by the muskrats on an extensive scale. To summarize the differences in seasonal distribution of 88 litters born to or conceived by adult females at Goose Lake in 1961 and samples totaling 3,209 litters from Iowa study areas collectively, 1935-57. There were about three times the proportion of early-season litters in the long-term Iowa series as for Goose Lake in 1961, similar proportions of mid-season litters, and over four times the proportion of late-born litters in the 1961 Goose Lake sample as for the Iowa series.

Korsakov, G. K. [REPRODUCTION OF THE MUSKRAT IN THE FOREST-STEPPE OF W SIBERIA.] Trudy Vsesoyuz. Inst. Zhivotn. Syr'e i Pushniny 18: 64-87. 1959. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 3D615. Transl. of Russian abstr.] WR 110: 28

Long abstract.

Kuzyakin, A. P., and P. A. Panteleev. [NEW BAIT METHODS FOR THE EXTERMINATION OF MUSKRAT.] In: Materialy Plan.-metod. soveshchaniya po zashchiterastitel'noi zony Urala i Sibiri, 1960. (Materials of the planning and methods conference on the protection of plant zones of the Urals and Siberia, 1960.) Novosibirsk. p. 34-37. 1961. [From Biol. Abstr. 43(2), 1963, from Referat. Zhur., Biol., 1962, no. 18I384. From transl. of Russian abstr.] WR 110: 28

A search has been conducted for a free-flowing grain bait, readily devoured by muskrats and suitable for seeding with an airplane. In summer the animals more readily eat steeped grains of peas and corn than root parts of stalks of cattail and sedge. Only carrots were superior in attraction ability to grainbait. The edibility of bait from steeped peas or corn was not decreased by poisoning it with zinc phosphide (8-10% of the weight of the bait). At such concentrations each grain contained a dose of poison lethal for the muskrats. The effectiveness of the aviation-bait method depended on the times of seeding the bait and behavior of the animals.

Savić, Ivo R. TOK RASPROASTIRANJA ONDATRE (ONDATRA ZIBETHICA L.) U JUGOSLAVIJI. [ON THE DISTRIBUTION OF THE MUSKRAT (ONDATRA ZIBETHICA L.) IN YUGOSLAVIA.] Arch. Sci. Biol. Soc. Serbe Biol. (Belgrade) 12(3-4): 83-88. 1960. [From J. Mammal. 44(1), 1963. (In Serbo-Croat) with German summ.] WR 110: 28

BEARS

Leopold, A. S. (Vert. Zool. Museum, Berkeley, Calif.) SITUACIÓN DEL OSO PLATEADO EN CHIHUAHUA. [THE STATUS OF THE SILVER BEAR (URSUS HORRIBILIS) IN CHIHUAHUA.] Rev. Soc. Mex. Hist. Nat. 19(1/4): 115-120, illus. 1958. [From Biol. Abstr. 41(3), 1963. (In Spanish).] WR 110: 29

Linnard, W., and D. H. Thompson. THE BROWN BEAR IN BULGARIA. Oryx 6(5): 274-278, 1 map. 1962. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 24 Dec. 1962.] WR 110: 29

An account of the history of conservation and present status of Ursus arctos in Bulgaria, types of damage, and proposals for leaving certain areas of mountain forest as natural cover for it.--Courtesy/ Frank M. Johnson.

Rausch, Robert L. (Arctic Health Res. Center, Anchorage, Alaska.) GEOGRAPHIC VARIATION IN SIZE IN NORTH AMERICAN BROWN BEARS, URSUS ARCTOS L., AS INDICATED BY CONDYLOBASAL LENGTH. Canadian J. Zool. 41(1): 33-45, 2 figs. Jan. 1963. WR 110: 29

Sumiński, Piotr. NIEDŹWIEDŹ -- ZWIERZE GINACE. [THE BROWN BEAR/VANISHING ANIMAL.] Chrońmy Przyrode Ojczysta 18(5): 17-30, 60-61, 6 figs. Sept.-Oct. 1962. [In Polish with English summ.] WR 110: 29

The taxonomy, geographical distribution, morphology, biology and habits of Ursus arctos in Poland.

Trautman, Milton B. (Ohio State Museum, Columbus.) SOLITARY CARNIVORE. Nat. Hist. 72(1): 10-19, illus. Jan. 1963. WR 110: 29

Profusely illustrated with photographs by Sven Gillsäter, this popular article contains information on behavior and feeding habits of the brown bear (Ursus middendorffi).

MUSTELIDS

Holmes, John C. (Univ. Alberta, Edmonton, Canada.) HELMINTH PARASITES OF PINE MARTEN, MARTES AMERICANA, FROM THE DISTRICT OF MACKENZIE. Canadian J. Zool. 41(2): 333. Mar. 1963. WR 110: 29

Jonkel, Charles J., and Richard P. Weckwerth. (Mont. Fish & Game Dept., Helena.) SEXUAL MATURITY AND IMPLANTATION OF BLASTOCYSTS IN THE WILD PINE MARTEN. J. Wildl. Mgmt. 27(1): 93-98. Jan. 1963. WR 110: 29

Abstract: Wild female martens (Martes americana) are apparently not sexually mature as yearlings, but wild males may reach sexual maturity as yearlings. In 1955, 1957, and 1958, 29 juvenile males, 34 juvenile females, and 4 females considered probable juveniles were captured, marked, and released. Of these, one male was recaptured as a yearling, and four females were recaptured after the breeding season in the year following initial capture. The male had sperm in the testes and epididymides when collected in July. Three of the females were nulliparous. The fourth female, tentatively classified as a juvenile when first captured, was pregnant when recaptured a year later. Examination of her skeleton raised doubts that she was a juvenile when first captured. A delay of 7 to 8.5 months intervenes between the breeding season in July and Aug. and the implantation of blastocysts from Feb. to Apr. One adult female captured on Dec. 22 implanted blastocysts about Feb. 22. A second adult did not implant blastocysts until about Apr. 10 after capture on Dec. 31. A third adult captured on Jan. 7 had not implanted blastocysts by Apr. 28. There is about a 27-day delay between implantation of the blastocysts and parturition in martens.

Leach, Berton J., and C. H. Conaway. (Univ. Mo., Columbia.) THE ORIGIN AND FATE OF POLYOVULAR FOLLICLES IN THE STRIPED SKUNK. J. Mammal. 44(1): 67-74, 15 figs. Feb. 1963. WR 110: 29

Abstract: Polyovular follicles develop from primary sex cords in the ovarian medulla of the juvenile striped skunk, Mephitis mephitis. These PF are homologous with the seminiferous tubules of the male. The PF degenerate during the

first summer after birth in the young skunk. The ova may degenerate without degeneration of the follicular granulosa cells which remain as anovular medullary cords. When the entire follicle degenerates, a thecal interstitial gland forms and contributes to the mass of medullary interstitial tissue. PF may be induced to ovulate by injections of exogenous gonadotropins but it appears that in the untreated animal degeneration typically occurs rather than ovulation.

Thompson, Harry V. WILD MINK IN BRITAIN. New Scientist 13(270): 130-132, 18 Jan. 1962. [From J. Mammal. 44(1), 1963.] WR 110: 30

DOGS, WOLVES, FOXES

Pimlott, Douglas H. (Univ. Toronto, Ontario, Canada.) WOLF CONTROL IN ONTARIO--PAST, PRESENT AND FUTURE. 25th Fed.-Provincial Wildl. Conf. (Ottawa, Canada), 1961. p. 54-74. 1962. WR 110: 30

The bounty system is still used for control of timber wolves and coyotes in Ontario, and comparison of the Ontario system is made with the system used in British Columbia--control by government employees. In Ontario the average annual cost of predator control during 1950-60 was $42,000, and in British Columbia the average annual cost during 1957-60 was $115,000. "'In the Prince George [British Columbia] area most [moose] ranges are severely overbrowsed and rapidly decreasing in productivity.' It is of interest that the Prince George area was mentioned on a number of occasions as the center of the wolf-control operations during the preceding nine years.... In the early days of the work there was the expression of purpose--'control where needed.' Then, apparently, followed the acceptance of the principle that actions could not be guided by biological considerations when public opinion was pressing."

Pulliainen, Erkki. SUSIEN ESIINTYMISESTÄ JA ELINTAVOISTA SUOMESSA vv. 1954-62. [THE APPEARANCE AND BEHAVIOUR OF WOLVES IN FINLAND DURING THE PERIOD 1954-62.] Suomen Riista 15: 99-129, 27 figs. 1962. [In Finnish with English summ.] WR 110: 30

Wolves inhabited all of Finland in the 1880's but became restricted to northern and eastern Finland by about 1900. In 1959 there was a marked repopulation of areas earlier vacated. Some information is given on breeding and hunting habits of the wolf.--From summ.

Smits, Lee. (Mich. Consolidated Gas Co., Detroit.) KING OF THE WILD. Mich. Conserv. 32(1): 45-50, illus. Jan.-Feb. 1963. WR 110: 30

A popular article on the history and current status of the timber wolf in Mich. The bounty was removed in 1958. The last wolf was killed on the Lower Peninsula more than fifty years ago, and only 20-30 wolves now remain on the Upper Peninsula. In addition there are 20-21 wolves in the Isle Royale National Park.

CATS

Sapozhenkov, Yu. F. (Moscow State Univ., USSR.) [THE ECOLOGY OF FELIS CARACAL MULL. IN THE KARAKUM.] Zool. Zhur. 41(7): 1111-1112. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 30

Caracal is a desert animal inhabiting porcupines' and foxes' burrows. Young (from 3 to 4) appear early in Apr. It feeds, in the main, on tolai hares, sandworts and jerboae. All specimens procured exhibited endoparasites (Toxocara mystax, Macranthorhynchus catulinus, Physaloptera sp.).--Auth. summ. transl.

Ahti, Teuvo, and R. L. Hepburn. (Ontario Dept. Lands & Forests, Maple, Canada.) PRELIMINARY STUDY OF WOODLAND CARIBOU RANGE IN ONTARIO. 25th Fed.-Provincial Wildl. Conf. (Ottawa, Canada), 1961. p. 5-16. 1962. WR 110: 31

It is felt that one caribou per 1 to 2 square miles would constitute adequate stocking on good Ontario range. The discrepancy between estimated potential (70,000) and estimated present population (10,000) is as yet unexplained.

Batchelor, Ron. (Alaska Dept. Fish & Game, Kodiak.) EVIDENCE OF YEARLING PREGNANCIES IN THE ROOSEVELT ELK. J. Mammal. 44(1): 111-112. Feb. 1963. WR 110: 31

A fetus was collected from a 27-month-old female elk, approximately 200 days after conception. The cow was approximately 20 months old at the time of conception.

Bergan, J. [REINDEER DAMAGE TO NATURAL REGENERATION OF SCOTCH PINE IN PASVIK.] Tidsskr. Skogbruk 70(3): 175-193. 1962. [From Bibliog. Agr. 27(2), 1963. In Norwegian.] WR 110: 31

Bigalke, R. C. (McGregor Memorial Museum, Kimberly, Republic South Africa.) SOME OBSERVATIONS ON THE ECOLOGY OF THE ETOSHA GAME PARK, SOUTH WEST AFRICA. Ann. Cape Provincial Museums 1: 49-67 + 2 maps. Mar. 1961. WR 110: 31

Marked differences were found between the distribution of the dominant ungulates, zebra, wildebeest, and springbok in the dry season (May-Sept.) and in the wet season (Oct.-Apr.). In the dry season, most of these animals ranged over an area characterized by long perennial grasses and abundant surface water. After onset of the rains most migrated to an area with annual grasses and temporary rainwater pools. Here parturition occurred. Other large ungulates which appeared to perform more or less regular seasonal movements were gemsbok, giraffe and eland.--From summ.

Boch, J., and F. Horchner. (Univ. Berlin-Zehlendorf, Germany.) UNTERSUCHUNGEN ÜBER HELMINTHEN DES SCHWARZWILDES. [INVESTIGATIONS OF THE HELMINTHS OF WILD SWINE.] Z. Parasitenk. 21(2): 113-122, illus. 1961. [From Biol. Abstr. 41(3), 1963. (In German).] WR 110: 31

Examinations for endo- and ectoparasites were conducted on freshly killed wild swine from various parts of South Germany. Short descriptions and photomicrographs are included. In the 99 wild boars examined, 11 spp. of helminths were found.

Brown, W. H., J. W. Stull, and Lyle K. Sowls. (Univ. Ariz., Tucson.) CHEMICAL COMPOSITION OF THE MILK FAT OF THE COLLARED PECCARY. J. Mammal. 44 (1): 112-113. Feb. 1963. WR 110: 31

The fatty acid content of fat from peccary milk and colostrum is tabulated. Colostrum milk fat appears to be no different than that of pure milk. There is similarity in the fat of peccary and domestic sow milk, and both have a much higher percentage of unsaturated acids than cows' milk.

Dirschl, Herman J. (Canadian Wildl. Serv., Univ. Saskatchewan, Saskatoon, Canada.) FOOD HABITS OF THE PRONGHORN IN SASKATCHEWAN. J. Wildl. Mgmt. 27(1): 81-93, 6 figs. Jan. 1963. WR 110: 31

Abstract: Food habits of the pronghorn (Antilocapra americana) in the Matador and Cypress Hills regions of Saskatchewan were studied by analysis of the rumen contents of 49 specimens collected at monthly intervals over a full annual cycle, plus 42 rumen samples from animals killed during the 1960 hunting season. Grasses were found to predominate in Apr.; forbs from May to July; deciduous browse, Aug. to Oct.; and evergreen browse, Nov. to Mar. Cacti and grain crops were minor items. Pronghorns were dispersed throughout the available range during the growing season, while in the winter they were concentrated in areas where sagebrush (Artemisia cana) and creeping juniper (Juniperus horizontalis) grew, indicating that antelope distribution is correlated with food distribution and that the abundance of these two key food items on the winter range is a prime factor in the carrying capacity of range

units. Chemical analyses made of food plants at intervals throughout the ye revealed a positive correlation between their protein content and the degree to which they were utilized by pronghorns. Plants having the highest protei levels were the preferred foods in all seasons.

Eiberle, K. [OBSERVATIONS ON THE BEHAVIOUR OF ROE DEER.] Schweizerische Z. Forstwesen 113(11): 660-668. 1962. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 8 Jan. 1963. In German with French summ.] WR 110: 32
Courtesy/ Frank M. Johnson.

Forrester, Donald J., and Robert S. Hoffman. (Mont. State Univ., Missoula GROWTH AND BEHAVIOR OF A CAPTIVE BIGHORN LAMB. J. Mammal. 44(1): 116-118. Feb. 1963. WR 110: 32

Forrester, Donald J., and Clyde M. Senger. (Mont. State Univ., Missoula, BIGHORNS AND LUNGWORMS. Mont. Wildl. p. 2-7, illus. Apr. 1963. WR 110: 32
Dramatic die-offs of bighorn sheep have been observed. "Considerable evidence suggests that bighorn numbers are seriously controlled by disease. Undoubtedly the lungworm-pneumonia complex is one of the most important of these diseases."

Gagarin, V. [THE HELMINTH FAUNA OF FREE-LIVING RUMINANTS IN KIRGIZIA.] Helminthologia (Bratislava) 2(1): 9-12. 1960. [From Helminthol. Abstr. 32(2 1963. In Russian with English, French and German summaries.] WR 110: 32
Gagarin lists the helminths found in the following wild ruminants in Kirgizia: in 10 Ovis ammon, 26 spp.; in 20 Capra sibirica, 24 spp.; in 11 Saiga tatarica, 10 spp.; and in 7 Capreolus capreolus, 9 spp.

Guggisberg, C. A. W. THE SANCTUARIES OF THE SOUTH. Africana (5): 8-9, 1 illus. Mar. 1963. WR 110: 32
In this well-illustrated article the current status of a number of species of African ungulates is indicated.

Halloran, Arthur F. (Wichita Mountains Wildl. Refuge, Cache, Okla.) ADDITIONAL LONGHORN CATTLE MANAGEMENT RECORDS FROM WICHITA MOUNTAINS WILDLIFE REFUGE. Proc. Okla. Acad. Sci. 42: 268-271. 1962. WR 110: 32
There is currently a herd of 302 longhorn cattle on the Wichita Mountains Wildlife Refuge. This herd was started in 1927, when 30 animals were receive

Hanson, W. C., F. W. Whicker, and A. H. Dahl. (Hanford Lab., General Electric Co., Richland, Wash.) IODINE-131 IN THE THYROIDS OF NORTH AMERICAN DEER AND CARIBOU: COMPARISON AFTER NUCLEAR TESTS. Science 140(3568): 801-80 1 fig. 17 May 1963. WR 110: 32
Abstract: Concentrations of I^{131} in thyroids of deer from Wash., Colo., Md., and of caribou from Alaska were measured after the resumption of nuclear weapon tests by the U.S.S.R. on 1 Sept. 1961. Maximum concentrations occurre nearly 2 months after the first nuclear test and then decreased at an effecti half-time of about 15 days. Thyroids from Wash. and Colo. deer showed the highest concentrations, thyroids from Alaskan caribou the lowest.

Kiddie, D. G. THE SIKA DEER (CERVUS NIPPON) IN NEW ZEALAND. New Zealand Forest Serv., Inf. Ser. no. 44. 35 p., 29 figs. + 2 maps. 1962. WR 110: 32
The sika deer was first introduced into New Zealand in 1885, but it did not become established until after a later introduction in 1905. Sika deer displace red deer, except at elevations above 3500 feet, by feeding on more sparse vegetation and by superior fighting prowess of the sika bucks. Much information is given on the behavior, biology, ecology and management of the sika deer, and comparisons are made with the red deer.

Koivisto, Ilkka. VUODEN 1962 HIRVIARVIOINNIN TULOKSIA. [RESULTS OF MOOSE (ALCES ALCES) CENSUS IN 1962.] Suomen Riista 15: 149-156, 2 figs. 1962. [In Finnish with English summ.] WR 110: 33

A country-wide census was made of moose by members of hunting clubs skiing around their hunting grounds and searching for moose in all probable moose habitat. The State Forest Board made similar checks in its areas. The census yielded a total of 31,000 moose.--From summ.

Ledin, Don, and Pat Karns. (Minn. Dept. Conserv., St. Paul 1.) ON MINNESOTA'S MOOSE (A STUDY BY GAME MANAGERS). Conserv. Volunteer 26(150): 40-48, illus. Mar.-Apr. 1963. WR 110: 33

Aerial counts indicated there are approximately 6,000 moose in the 15,000 square miles of Minnesota's chief moose range. In some areas there are more than 3 moose per section, and over-browsing is evident. It is recommended that about 1,000 hunters be licensed to hunt moose and 300 animals harvested.

Lubinsky, G. (Univ. Manitoba, Winnipeg, Canada.) METADINIUM CAUDATUM SP. N. --A RUMEN CILIATE OF MUSKOX FROM NORTHERN CANADA. Canadian J. Zool. 41(1): 29-32, 8 figs. Jan. 1963. WR 110: 33

Makridin, V. P. (Far North Sci.-Res. Inst. Agr., Norik'sk, USSR.) [THE WAYS AND TIMES OF WILD REINDEER MIGRATIONS IN THE TAIMYRSK NATIONAL TERRITORY.] Zool. Zhur. 41(6): 927-934, illus. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 33

Results of observations on spring migrations of wild reindeer in Taimyr National Territory are presented. Observations were carried out from airplane in 1960 and 1961. Data on numerousness of reindeer herds, distance of diurnal migrations and on ways of migrations are given. Measures of better preservation of reindeer and their control are recommended.--Auth. summ. transl.

Makridin, V. P. (Far North Sci.-Res. Inst. Agr., Noril'sk, USSR.) [THE NORTHERN LIMIT OF ELK DISTRIBUTION.] Zool. Zhur. 41(7): 1090-1094, illus. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 33

Results of aero-visual observation on distribution of elks in Nenets, Yamalo-Nenets and Taimyr national districts are presented. Instances of elk death from wolves and glutton are listed.--From auth. summ. transl.

Maniatopoulos, M. [THE DANGER OF COMPLETE EXTERMINATION OF DEER.] Dassika Chron. 48(4): 477-478. Oct. 1962. [From Bibliog. Agr. 27(2), 1963. In Greek.] WR 110: 33

McEwan, Eoin H. (Canadian Wildl. Serv., Edmonton, Alberta.) SEASONAL ANNULI IN THE CEMENTUM OF THE TEETH OF BARREN GROUND CARIBOU. Canadian J. Zool. 41(1): 111-113 + 1 fig. on 1 pl. Jan. 1963. WR 110: 33

Abstract: Annular growth layers in the cementum of the incisor teeth of caribou (Rangifer tarandus) consisted of light and dark zones. The seasonal deposition of cementum is such that each dark zone or rest line represents one winter season. Because cemental deposition in a permanent incisor does not commence until the time of eruption, about 8 months after birth, 1 year must be added to the number of growth layers in determining the age of an animal.

Miers, K. H. (Dept. Internal Affairs, Wellington, New Zealand.) HERD COMPOSITION AND EFFECTIVE REPRODUCTION OF WAPITI (CERVUS CANADENSIS) OF EASTERN FIORDLAND. Proc. New Zealand Ecol. Soc. (9): 31-33. 1962. WR 110: 33

Wapiti were released in New Zealand in 1905, and they are now well established. Of 400 yearlings and older animals counted, 42% were males. About 54 calves per 100 adult females were reared to 4 months of age. About 20% of the calves died in their first year.--From concl.

Mossman, A. S., P. A. Johnstone, C. A. R. Savory, and R. F. Dasmann. (Humboldt State Coll., Arcata, Calif.) NECK SNARE FOR LIVE CAPTURE OF AFRICAN UNGULATES. J. Wildl. Mgmt. 27(1): 132-135, 1 fig. Jan. 1963. WR 110: 34

Construction and use of a simple neck snare for the capture of wild African ungulates are described. "It is easiest and safest of all traps to set; the materials needed are of minimum cost, bulk, and weight; and it efficiently catches African ungulates, as well as other animals."

Ogren, Herman August. THE BARBARY SHEEP, AMMOTRAGUS LERVIA (PALLAS), OF THE CANADIAN RIVER GORGE, NEW MEXICO. Ph.D. thesis, Univ. Southern Calif. 256 p. 1962. [From abstr. in Dissertation Abstr. 23(7), 1963.] WR 110: 34

Fifty-seven Barbary sheep were released in the Canadian River Gorge in 1950. A survey in the winter of 1958-1959 indicated 1300 were present in an area of 220 square miles. The reproductive potential of Barbary sheep probably exceeds that of any North American big game ungulate because there appears to be an overlap in lactation and estrous periods so that conception may occur 2-3 times/year. Measurement methods were devised for aging of the sheep. The sheep have been enthusiastically received by sportsmen, and 90% of 902 persons who ate its meat thought it good. To some extent this animal is filling a niche unoccupied by domestic stock or native game.

Ortwein, Ludwik. ŻUBRY W PUSZCZY BORECKIEJ. [THE EUROPEAN BISONS IN PUSZCZA BORECKA.] Chrońmy Przyrode Ojczysta 16(5): 17-20, 53, 1 fig. Sept.-Oct. 1960. [In Polish with English summ.] WR 110: 34

Schmid, E. [THE PROBLEM OF WILDLIFE POPULATION DENSITY: A CONTRIBUTION TO DEER PROBLEM.] Schweiz. Z. Forstw. 113(11): 643-659. Nov. 1962. [From Bibliog. Agr. 27(2), 1963. In German with French summ.] WR 110: 34

"Includes damaging effects."

Ścibor, Julian. ŻUBRY NA WOLNOŚCI W PUSZCZY BIAŁOWIESKIEJ. [THE BISONS OF THE BIALOWIEŻA PRIMEVAL FOREST IN THEIR NATURAL STATE.] Chrońmy Przyrode Ojczysta 16(3): 18-25, 61, 3 figs. May-June 1960. [In Polish with English summ.] WR 110: 34

As a result of releases beginning in 1956 and their progeny the free-ranging bison population on Bialowieża was 28 (12 ♂♂:16 ♀♀) in 1959. This forest is capable of supporting 100 to 150 bison. It has been ascertained that bison cause less damage in the forest than the red deer.

Ścibor, Julian. ŻUBRY W PUSZCZY BIAŁOWIESKIEJ. [THE BISON IN THE BIALOWIEŻA PRIMEVAL FOREST.] Chrońmy Przyrode Ojczysta 17(3): 16-26, 64-67, 6 figs. May-June 1961. [In Polish with English summ.] WR 110: 34

A detailed account of observations of 67 bison (28 ♂♂:39 ♀♀) in the Bialowieża during 1960. Three herds are recognized: the breeding herd, the free-ranging herd and the experimental herd. Observations are organized under the respective categories.

Scotter, George. (Utah State Univ., Logan.) ARBOREAL AND TERRESTRIAL LICHENS AS A FOOD SOURCE FOR THE WESTERN CARIBOU. Proc. Utah Acad. Sci., Arts & Letters 39: 204. 1961/1962. [From Biol. Abstr. 42(5), 1963.] WR 110: 34

Simkin, D. W. (Ontario Dept. Lands & Forests, Maple.) TAGGING MOOSE BY HELICOPTER. J. Wildl. Mgmt. 27(1): 136-139, 1 fig. Jan. 1963. WR 110: 34

Description of technique wherein during 3 days of intensive tagging effort 50 moose were tagged in 10 hours and 35 minutes of flying--thus averaging 4.7 moose per hour. The best season for tagging in nw Ontario is early July; the optimum time of day is during the early hours of the morning and in the late hours of daylight in the evening, i.e., during period of active feeding.

Sowls, Lyle K., and Paul S. Minnamon. (Ariz. Coop. Wildl. Res. Unit, Tucson.) GLASS BEADS FOR MARKING HOME RANGES OF MAMMALS. J. Wildl. Mgmt. 27 (2): 299-302. Apr. 1963. WR 110: 35

Abstract: Preliminary experiments on the use of colored glass beads to help determine the movement and home range of the collared peccary (Pecari tajacu) in the Tucson Mountains, Pima County, Arizona, are reported. Colored glass beads were fed to a dog, a captive gray fox (Urocyon cinereoargenteus), and captive peccaries. The captive peccaries passed the majority of the beads in 36-48 hours, but small numbers appeared in the droppings for up to 18 days. Wild trapped peccaries were then force-fed three colors of beads at three different stations on the study area. Some 200 vials of beads were administered to 46 individuals involved in 69 trappings. Beads were found in droppings at 9 of 24 scat stations within the ranges of the herd.

Williams, Thomas R. THE SIGNIFICANCE OF SALT AND NATURAL LICKS IN ELK MANAGEMENT. M.S. thesis, Univ. Idaho. 200 p. 1962. WR 110: 35
Courtesy/ Paul D. Dalke.

Wing, Larry D. BIG GAME AND LIVESTOCK BROWSE UTILIZATION AND FEEDING HABITS ON A SANDY RANGE IN SOUTHEASTERN IDAHO. M.S. thesis, Univ. Idaho. 89 p. 1962. WR 110: 35
Courtesy/ Paul D. Dalke.

Yoakum, Jim, compiler. INTERSTATE ANTELOPE CONFERENCE / 1962 TRANSACTIONS. ii + 114 p., illus. Dec. 1962. $1.00, available from Interstate Antelope Conf., P. O. Box 1551, Reno, Nevada. WR 110: 35
Annual reports: Antelope status report for the Sheldon-Hart Mountain National Antelope Refuge, B. Hazeltine, L. Worden, J. Hill, and O. Deming; California antelope report, 1962, Wallace G. Macgregor; Idaho antelope investigation--1962, Wesley M. Shaw; Nevada antelope studies, progress report, 1962, William W. Foree; and Oregon antelope report, 1962, Dave Lumen. Contributed papers: Antelope and sheep fences, Charles H. Rouse; Extent and sources of parasitism in pronghorn antelope, Rex W. Allen; Interstate antelope range--its research and management needs Jim Yoakum; The role of habitat in big-game management, J. Edward Deily; Brief history of antelope in Idaho, A. E. Nielson; Relationship of sagebrush spraying to antelope welfare, Frank W. Stanton; Soil moisture measurements, Morlen W. Nelson; Some data on the natality of a pronghorn population and their bearing on future research, Edson Fichter; Hunting characteristics of eagles, Morlan W. Nelson; Wildlife fence design, Interstate Antelope Conference; Guide lines for antelope management, Glen K. Griffith.

DEER (Odocoileus)

Blair, Robert M., James A. Hays, and Louis Brunett. (Southern Forest Expt. Sta., Alexandria, La.) STREAM-CROSSING STRUCTURE FOR DEER FENCE. J. Wildl. Mgmt. 27(1): 129-132, 2 figs. Jan. 1963. WR 110: 35
"Stream crossings are the most vulnerable points in a deer-proof fence. When an inadequately constructed crossing washes out, enclosed deer may escape and unwanted animals enter. Structures of the type described here have withstood 2 years of frequent, severe flooding in the pine-hardwood hills of central La."

Dasmann, Raymond F., and William P. Dasmann. (Univ. Calif., Berkeley.) MULE DEER IN RELATION TO A CLIMATIC GRADIENT. J. Wildl. Mgmt. 27(2): 196-202, 2 figs. Apr. 1963. WR 110: 35
Abstract: A comparison of mule deer (Odocoileus hemionus) populations and their habitats occurring along a climatic gradient from humid coastal forest through chaparral to sagebrush reveals differences in soils, quality of forage, plant successional rate, and animal numbers. These differences determine the usefulness of fire, mechanical treatment, or other disturbance of climax

vegetation for improving deer habitat. They also affect the degree of control which must be exercised over big game numbers. The protein content of deer forage tends to follow the climatic gradient. In general, soils of the more humid vegetation regions produce less protein and hence support fewer, and smaller, deer in permanent populations than do the soils of less humid regions. Although protein content of deer forage can be increased by burning in these humid regions, the increase is only temporary. Fire, logging, or other means of removing climax vegetation and starting successional growth favor deer in the coastal forest and chaparral by increasing the amount and the protein content of forage. In the arid sagebrush, however, such disturbances are usually detrimental. The high value of timber in most of the coastal forest prohibits direct management for deer, and deer are a temporary crop following logging. Chaparral and sagebrush, however, can be managed for the production of deer as a primary crop.

Green, Houston. (Texas Game & Fish Comm., Tyler.) NEW TECHNIQUE FOR USING THE CAP-CHUR GUN. J. Wildl. Mgmt. 27(2): 292-296, 1 fig. Apr. 1963. WR 110:

Abstract: The Cap-Chur gun assembly, as distributed by the manufacturer, was employed to immobilize white-tailed deer (Odocoileus virginianus) of a wide size range with nicotine salicylate within 10-20 seconds without varying the dosage. The success of this operation is attributed to a new firing apparatus within the projectile and to a technique of varying the target area with the estimated weight of the deer. A dosage of 350 mg/cc was successfully used to immobilize deer ranging in weight from 60 to 130 pounds merely by directing the shot to the chest region in deer weighing over 100 pounds and to the hip in deer weighing less.

Haugen, Arnold O. (Iowa Coop. Wildl. Res. Unit, Iowa State Univ., Ames.) AN IMPROVED TECHNIQUE FOR PRESERVING DEER UTERI. J. Wildl. Mgmt. 27(1): 142-143, 1 fig. Jan. 1963. WR 110: 36

The new technique (developed and tested successfully on the reproductive tracts of 700 white-tailed deer) involves temporary freezing and storing of the tracts immediately after collection. The tracts, prior to laboratory analysis, are thawed, inflated with alcohol, and stored in formalin.

Pearson, Henry A., Arthur D. Smith, and Philip J. Urness. (Utah State Univ., Logan.) EFFECTS OF SUCCINYLCHOLINE CHLORIDE ON MULE DEER. J. Wildl. Mgmt. 27(2): 297-299. Apr. 1963. WR 110: 36

Abstract: Succinylcholine chloride was tested as an immobilizing agent for mule deer (Odocoileus hemionus). Effective doses ranged from 0.012 to 0.056 mg/lb of body weight. Immobilization occurred in 2-15 minutes; duration of immobilization was 4-37 minutes. Two animals died from doses within this range, but death may have resulted from causes apart from the drug. Larger dosages were required and erratic results were obtained when the drug was administered with a projectile syringe.

Ryel, Lawrence A. (Mich. Dept. Conserv., Lansing.) THE OCCURRENCE OF CERTAIN ANOMALIES IN MICHIGAN WHITE-TAILED DEER. J. Mammal. 44(1): 79-98, 1 fig. Feb. 1963. WR 110: 36

Abstract: Available Michigan records are presented for white-tailed deer exhibiting: dicephalism, maxillary canines, short lower jaws, pelage aberrations (albino, white, or partly white coloration or with manes), and certain antler abnormalities (antlered does and males with one or both antlers missing). Variations in incidence of occurrence of each anomaly are discussed. [A bibliography of 60 titles is given.]

Shaw, Harley G. SEASONAL HABITAT USE BY WHITE-TAILED DEER IN THE HATTER CREEK ENCLOSURE. M.S. thesis, Univ. Idaho. 52 p. 1962. WR 110: 36

Courtesy/ Paul D. Dalke.

Short, Henry L. (Colo. Coop. Wildl. Res. Unit, Fort Collins.) RUMEN FERMENTATIONS AND ENERGY RELATIONSHIPS IN WHITE-TAILED DEER. J. Wildl. Mgmt. 27(2): 184-195, 2 figs. Apr. 1963. WR 110: 37

Abstract: White-tailed deer (Odocoileus virginianus) and a permanently fistulated Holstein-Friesian steer were concurrently fed three diets: (1) an alfalfa-corn concentrate, (2) reproductive sprouts of big-tooth aspen (Populus grandidentata), and (3) leaf sprays of white cedar (Thuja occidentalis). Volatile fatty acid (VFA) concentrations in rumen liquor and the composition of VFA's and gases from in vitro fermentations demonstrated that the deer and the steer utilized the alfalfa-corn concentrate similarly but that the deer digested aspen and white cedar better than did the steer. Deer rumen liquor from all diets digested cellulose at a low rate, and white cedar oils inhibited fermentation by steer rumen microorganisms. Rumen size and total wet and dry weights for rumen contents were smaller for the deer, when compared with body size, than were comparable measurements for the cow. It is argued that VFA's resulting from rumen fermentation may provide up to half the maintenance energy requirements of deer.

Trout, Les. (Burley, Idaho.) THE CASSIA DEER HERD. Idaho Wildl. Rev. 15 (1): 11-13, illus. Jan.-Feb. 1963. WR 110: 37

Bitterbrush is considered of major importance as a winter deer food within the Cassia unit, and a survey indicated that about one-third of bitterbrush plants are old and dying. An effort was made to rejuvenate old stands of bitterbrush by dragging a railroad rail crosswise over them and thus breaking off parts of the plants. The long-range effects of this treatment are being studied.

MAMMALS--MARINE

Caldwell, Melba C., Ruth M. Haugen, and David K. Caldwell. (Dept. Zool., Univ. Calif., Los Angeles.) HIGH-ENERGY SOUND ASSOCIATED WITH FRIGHT IN THE DOLPHIN. Science 138(3543): 907-908, illus. 1962. [From Biol. Abstr. 42(5), 1963.] WR 110: 37

A sound produced by the Atlantic bottlenose dolphin (Tursiops truncatus) under conditions of fright is described and illustrated. It is suggested that a similar sound may be the basis of the long-distance alarm signal reported in other cetaceans.--Authors.

Evans, William E., and John H. Prescott. (Lockheed Calif. Co., Burbank, Calif.) OBSERVATIONS OF THE SOUND PRODUCTION CAPABILITIES OF THE BOTTLENOSE PORPOISE: A STUDY OF WHISTLES AND CLICKS. Zoologica 47(3): 121-128, 6 figs. + 4 pls. Fall 1962. WR 110: 37

All of the natural vocalizations of the Tursiops studied could be placed in one of the three following categories: plosive or pulse signals, whistles, and barks. Tursiops is capable of producing echo-location pulses and whistles simultaneously. Anatomical and behavioral evidence, as well as sound pressure measurements, indicate that the echo-location clicks are produced in the nasal-sac system of porpoises.--From concl. and summ.

Fedoseev, G. A. (Pacific Sci.-Res. Inst. Fishing & Oceanog., Magadan, USSR.) [THE STATE OF THE RESERVES AND THE DISTRIBUTION OF PACIFIC WALRUSES.] Zool. Zhur. 41(7): 1083-1089, map. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 37

In autumn of 1960, stock was taken of the number of Pacific walruses by air photography. The number of Pacific walruses was evaluated at approximately 50,000 head. The greater part of them stay in the summer and autumn period in the area of the Wrangel and Herald islands. Aerovisual observations make it possible to determine the types of the shore lay places of the walruses, i.e. to distinguish the males' lay places from the mixed lay places of the females and of the young.--From auth. summ. transl.

Irving, Laurence, Leonard J. Peyton, Cordell H. Bahn, and Richard S. Peterson. (Arctic Health Res. Center, Anchorage, Alaska.) ACTION OF THE HEART AND BREATHING DURING THE DEVELOPMENT OF FUR SEALS (CALLORHINUS URSINUS). Physiol. Zöol. 36(1): 1-20, 13 figs. Jan. 1963. WR 110: 38

Johannessen, E. (Fiskeridirektoratet, Bergen, Norway.) SELFANGSTEN, 1961. [THE SEAL CATCH, 1961.] Arsberetning vedkommende Norges Fiskerier 1961(10): 1-19. 1962. [From Biol. Abstr. 42(5), 1963. (In Norwegian).] WR 110: 38
Fifty eight vessels landed a total of 11,671 tons of seals in expeditions to Newfoundland (13 trips), West Ice (40 trips), North Ice (3 trips) and East Ice (11 trips). Of 217,637 animals taken, there were 142,339 Greenland seals, 73,395 hooded seals, 753 big seals, 1108 ring seals, and 42 polar bears. Blubber totaled 3,747 tons. In addition, expeditions to Jan Mayen, Bear Island, and Hopen yielded 52 polar bears, 26 foxes, and 100 kg blubber.--R. P. Elliott.

Maher, William J., and Norman J. Wilimovsky. (Univ. Calif., Berkeley.) ANNUAL CATCH OF BOWHEAD WHALES BY ESKIMOS AT POINT BARROW, ALASKA, 1928-1960. J. Mammal. 44(1): 16-20. Feb. 1963. WR 110: 38
Abstract: The number of bowhead whales (Balaena mysticetus) taken at Barrow, Alaska, each year from 1928 to 1960 averages 5.8 whales per year. The lengths and dates of capture are given for most of the whales taken in the spring seasons since 1954. Most (72%) of the whales were taken in mid-May. Eighty-eight per cent of the whales were less than 40 feet long, and therefore presumably sub-adult. One was a recently born calf. Another was the largest of record, 61 feet.

Pike, Gordon C. (Fisheries Res. Board Canada Biol. Sta., Nanaimo, British Columbia, Canada.) MIGRATION AND FEEDING OF THE GRAY WHALE (ESCHRICHTIUS GIBBOSUS). J. Fisheries Res. Board Canada 19(5): 815-838, illus., maps. 1962. [From Biol. Abstr. 41(3), 1963.] WR 110: 38
Observations of gray whales from the coasts of British Columbia, Washington, and Alaska are compared with published accounts in order to re-assess knowledge of migration and feeding of the American herd. Source of material is mainly from lighthouses and lightships. The American herd of gray whales retains close contact with the shore during migration south of Alaska. Reconstruction of the migration from all available data shows that most of the American herd breeds and calves in Jan. and Feb., migrates northward in Mar., Apr. and May, feeds from June through Oct., and migrates southward in Nov. and Dec.--From auth. abstr.

Schevill, William E. CETACEA (THE WHALES). Norsk Hvalfangst-Tidende (Norwegian Whaling Gazette) 51(4): 141-156. Apr. 1962. (Reprinted from Encyclopedia of the Biological Sciences.) [From J. Mammal. 44(1), 1963.] WR 110: 38

MAMMALS--OTHER GROUPS

Barr, Thomas R. B. (Univ. British Columbia, Vancouver, Canada.) INFECTIOUS DISEASES IN THE OPOSSUM: A REVIEW. J. Wildl. Mgmt. 27(1): 53-71. Jan. 1963. WR 110: 38
Existing information on infectious diseases in the opossum (especially on those diseases which also occur in man) is summarized. Bibliography of 101 items.

Long, W. R. (Texas Game & Fish Comm., Walton Bldg., Austin.) POSSUM POSSIBILITIES. Texas Game & Fish 21(3): 8-9, illus. Mar. 1963. WR 110: 38
Reports on the use of the opossum for research at the Univ. Colo. Med. Center in Denver. Pregnant females are being trapped in Texas and sent by jet airplane to Denver. The objective of the research is to develop a vaccine for leukemia.

Pracy, L. T. INTRODUCTION AND LIBERATION OF THE OPOSSUM (TRICHOSURUS VULPECULA) INTO NEW ZEALAND. New Zealand Forest Serv., Inf. Ser. no. 45. 28 p., 3 figs., 1 map. 1962. WR 110: 39

Opossums from Australia were first introduced into New Zealand about 1840. Government participation was initiated in 1898. The main purpose of the introduction was to establish a fur industry, and trapping the animals yielded a good financial return from which the government benefitted through levying royalties. Chiefly since 1917 there has been disagreement as to the wisdom of fostering the opossum, and illegal releases were made even as bounties were being paid for destruction of the animals. Opossums are widely distributed throughout New Zealand, and occupation of the few remaining suitable habitats is expected within the next decade.--From synopsis.

Verts, B. J. (Ill. Nat. Hist. Surv., Urbana.) MOVEMENTS AND POPULATIONS OF OPOSSUMS IN A CULTIVATED AREA. J. Wildl. Mgmt. 27(1): 127-129. Jan. 1963. WR 110: 39

"Opossum populations appear to be much lower on cultivated lands than in woodlands. This is probably because one or more of the requirements of opossums are less abundant in cultivated fields. The more extensive movements and large home ranges exhibited by opossums residing in cultivated areas may indicate that they are able to compensate to some extent for shortages of requirements by searching over larger areas."

BIRDS--GENERAL

Herzfeld, Richard P. (Milwaukee Public Museum, Wis.) AUTOMATION IN BIRD PHOTOGRAPHY. J. Biol. Photogr. Assoc. 30(2): 53-62, illus. 1962. [From Biol. Abstr. 41(2), 1963.] WR 110: 39

A photoelectric light circuit, when broken by a flying bird, activates a solenoid which operates a Royal Robot camera and strobe flash illuminators to obtain excellent action pictures of bird flight.--O. W. Richards.

Holgersen, Holger. RINGMERKINGSOVERSIKT 1961. [BIRD-BANDING IN NORWAY 1961, REPORT NO. 12.] Sterna (Stavanger Museum) 5(3): 89-123, map. 1962. [From Biol. Abstr. 42(5), 1963. (In Norwegian) with English summ.] WR 110: 39

Just over 20,000 birds were ringed in Norway in 1961 by the Norwegian State Game Research (Statens Viltundersøkelser) and Stavanger Museum. The grand total has now passed 400,000. The list of recoveries gives only a selection. All recoveries abroad have been included regardless of distance from place of ringing.--From auth. abstr.

Hubbard, John P. (Univ. Mich., Ann Arbor.) NOTEWORTHY RECORDS FROM NEW MEXICO. Condor 65(3): 236-239. May-June 1963. WR 110: 39

An annotated list is given of 33 spp. of less common New Mexico birds now in the collection of the University of Michigan Museum of Zoology.

Johansen, Hans. RESULTATER AF RINGMAERKNINGERNE I 1957 OG 1958, (ZOOLOGISK MUSEUM, KØBENHAVN) NR. 26-27. [RESULTS OF BIRD BANDING IN 1957 AND 1958, ZOOLOGICAL MUSEUM, COPENHAGEN, NO. 26-27.] Vidensk. Medd. Dansk Naturhist. Forening I København 124: 216-303. 1962. [From Biol. Abstr. 42(5), 1963. (In Danish).] WR 110: 39

The numbers of individuals of each spp. banded in these years are tabulated, totalling 16,351 individuals in 1957 and 14,972 in 1958, with detailed data on recoveries of 103 spp.--A. K. Winner.

Rice, Dale W. (Sand Point Naval Air Sta., Bldg. 192, Seattle 15, Wash.) BIRDS ASSOCIATING WITH ELEPHANTS AND HIPPOPOTAMUSES. Auk 80(2): 196-197. Apr. 1963. WR 110: 39

Fork-tailed drongos (Dicrurus adsimilis) were observed following elephants and feeding on insects flushed by the elephants or catching tsetse flies flying around them. Piapiacs (Ptilostomus afer) were observed on the backs

and sides of elephants, apparently eating insects caught there. Common sandpipers (Tringa hypoleucos) on the backs of hippopotamuses were observed feeding around the "shoreline" on insects drifting past rather than on ecto-parasites.

Stewart, Ian F. (3 Orchard Rd., Linthorpe, Middlesbrough, England.) VARIATION OF WING LENGTH WITH AGE. Bird Study 10(1): 1-9, 1 fig. Mar. 1963. WR 110: 40

The wing length was significantly shorter on blue tits (Parus caeruleus) in their first winter than on older birds.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Alderton, Cora C. (Tucson, Ariz.) THE BREEDING BEHAVIOR OF THE BLUE-BLACK GRASSQUIT. Condor 65(2): 154-162. Mar.-Apr. 1963. WR 110: 40

Based on studies made during 1955 through 1961 in the Canal Zone. Nesting occurs in the rainy season with its peak in Sept. Of 53 eggs, 73% hatched, and 56.6% produced fledged young. Incubation was largely performed by ♀♀, but also by ♂♂. One ♀ incubated during 80% of observed time with attentive periods averaging more than 2 hours. Both parents fed the young.--From summ.

Annan, Ormsby. (Stephen F. Austin State Coll., Nacogdoches, Texas.) EXPERIMENTS ON PHOTOPERIODIC REGULATION OF THE TESTIS CYCLE IN TWO SPECIES OF THE THRUSH GENUS HYLOCICHLA. Auk 80(2): 166-174. Apr. 1963. WR 110: 40

When ♂ hermit thrushes were treated for two months with 15-hour nights before being put on 15-hour days, they were brought into full breeding condition two months ahead of the natural time. When no preparatory period of long nights was experienced, hermit thrushes kept on 15-hour days did not respond.--From summ.

Aschoff, Jurgen, and Rutger Wever. BEGINN UND ENDE DER TÄGLICHEN AKTIVITÄT FREILEBENDER VÖGEL. [BEGINNING AND END OF THE DAILY ACTIVITY OF FREE LIVING BIRDS.] J. Ornithol. 103(1): 2-27. 1962. [From Biol. Abstr. 41(2), 1963. (In German).] WR 110: 40

Problems of measuring the daily pattern of birds are discussed. Both morning and evening activity throughout year must be measured. Individual observations on both sexes has to be measured separately. In order to answer many questions accurate information on daily activity of birds at different latitudes is needed.--F. J. Brenner.

Brown, Jerram L. (Univ. Rochester, Rochester, N. Y.) SOCIAL ORGANIZATION AND BEHAVIOR OF THE MEXICAN JAY. Condor 65(2): 126-153, 2 figs. Mar.-Apr. 1963. WR 110: 40

Based on observations of 50 color-banded Aphelocoma ultramarina in the Santa Rita Mountains of Ariz. Information is given on flock structure, flock dynamics, behavior, social organization, and evolution of this species.

Durand, Alan L. A REMARKABLE FALL OF AMERICAN LAND-BIRDS ON THE 'MAURETANIA' NEW YORK TO SOUTHAMPTON, OCTOBER 1962. British Birds 56(5): 157-164. May 1963. WR 110: 40

Following hurricane "Daisy" 130+ individuals of 34 spp. were recorded on board the Mauretania between 7 and 14 October. At least 9 individuals of 6 spp. completed the trip as far as the Irish coast.--W. T. Van Velzen.

Ficken, Robert W. (Univ. Md., College Park.) COURTSHIP AND AGONISTIC BEHAVIOR OF THE COMMON GRACKLE, QUISCALUS QUISCULA. Auk 80(1): 52-72, 2 figs., 1 pl. Jan. 1963. WR 110: 40

The probable derivation, biological significance, motivation and function of displays are discussed. The study is based on field observations of two colonies, each with 15-20 pairs, and on observations of captive birds.

Gofman, D. N. [RELATIONSHIP BETWEEN THE AMOUNT OF YOLK IN BIRDS' EGGS, THE TYPE OF NESTING AND BODY SIZE.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 67 (6): 34-41, illus. 1962. [From Biol. Abstr. 42(5), 1963. (In Russian).] WR 110: 41

A comparison of the relative size of the yolk in the eggs of 3 open-nesting (Charadrius dubius, Corvus frugilegus and Turdus ericetorum) and 3 closed-nesting (Dendrocopus major, Corvus monedula and Sturnus vulgaris) species of birds showed that the yolk is significantly smaller in the latter type. Tables are presented showing data for the relative amounts of yolk and dry mass in the eggs of 30 spp. of precocial, semiprecocial, semialtricial and altricial birds in relation to the stability of the nest environment.--From abstr. by R. R. Blanken.

Hardy, John William. (Occidental Coll., Los Angeles, Calif.) EPIGAMIC AND REPRODUCTIVE BEHAVIOR OF THE ORANGE-FRONTED PARAKEET. Condor 65(3): 169-199, 10 figs. + frontispiece. May-June 1963. WR 110: 41

A detailed report with much original information on behavior and breeding of both captive and wild birds.

Helms, Carl W. (Bucknell Univ., Lewisburg, Pa.) A MUTUAL DISPLAY OF THE CATBIRD. Bird-Banding 34(1): 38-39. Jan. 1963. WR 110: 41

The display, which is described in detail, is assumed to function in pair formation or pair bond maintenance.

Ishizawa, Jicho. [ON THE DISTRIBUTION AND MIGRATION OF LOCUSTELLA O. OCHOTENSIS.] Tori 15(75): 214-226. 1960. [From Bird-Banding 33(3), 1962. In Japanese with English summ.] WR 110: 41

Males overwhelmingly predominated in the population observed during early June, but by the end of June the opposite situation prevailed. Autumn casualties of migrating birds (particularly among birds of the year) were leaner than those in the spring. Gonadal development and fat deposition tended to be rather uniform among birds of a flock but differed from flock to flock, irrespective of season.--From review by R. J. Newman.

Kaskneem, Aleks. LINDUDE RÄNNE JA RAADIOTEHNIKA. [MIGRATION OF BIRDS AND RADIO ENGINEERING.] Eesti Loodus 2: 120-121. 1961. [From Biol. Abstr. 41(2), 1963. (In Estonian) with English and Russian summaries.] WR 110: 41

The use of transistors in modern radio engineering makes it possible to produce such a small and light transmitter that it can be affixed to the stork, one of our biggest birds of passage. On taking the bearings of the bird by means of receivers supplied with directional aerials and located at a distance of 40 to 60 km from the bird's presumable air route and on doing so in two localities at certain intervals the position of the bird can be periodically determined and entered on a map. The dependence of the route on the natural meteorological and cosmic conditions during the flight is then studied.--Author.

King, James R., and Donald S. Farner. (Wash. State Univ., Pullman.) THE RELATIONSHIP OF FAT DEPOSITION TO ZUGUNRUHE AND MIGRATION. Condor 65(3): 200-223, 18 figs. May-June 1963. WR 110: 41

The basic and essential environmental factor in the development of vernal fat deposition and Zugunruhe (and also vernal migration) in Zonotrichia leucophrys gambelii is the vernal increase in day length. Environmental temperature, in an obviously complex manner, has an important modifying role with respect to the schedule and intensity of these phenomena. [With relatively long (approximately 50 titles) bibliography.]--From summ.

Moynihan, M. (Canal Zone Biol. Area, Drawer C, Balboa.) DISPLAY PATTERNS OF TROPICAL AMERICAN "NINE-PRIMARIED" SONGBIRDS. III. THE GREEN-BACKED SPARROW. Auk 80(2): 116-144, 6 figs. Apr. 1963. WR 110: 41

This is primarily a study of the hostile and sexual displays of Arremonops conirostris.

Myres, M. T. (Lakehead Coll., Port Arthur, Ontario, Canada.) OBSERVATIONS WITH RADAR OF THE FEEDING FLIGHTS OF KITTIWAKES. Bird Study 10(1): 34-43, 1 fig. Mar. 1963. WR 110: 42

Observations with radar of bird migration were made from 2 Apr. to 27 May and 2 Sept. to 7 Nov. 1960. Two movements, which appeared to be of local character, are described in detail for Rissa tridactyla.--W. T. Van Velzen.

Nisbet, I. C. T. MEASUREMENTS WITH RADAR OF THE HEIGHT OF NOCTURNAL MIGRATION OVER CAPE COD, MASSACHUSETTS. Bird-Banding 34(2): 57-67, 1 fig. Apr. 1963. WR 110: 42

The most frequent height of migrants was 1,500-2,500 feet above sea level in the period 3-4 hours after sunset. On at least 5 nights the average height reached a peak before midnight and declined slowly thereafter but increased again at dawn. Small passerines usually flew higher than larger species. The greatest height observed (20,000 feet) appeared to be from shorebirds starting or completing a long sea crossing. Birds often flew over low-lying fog, but they did not fly through or over medium and high clouds.--From summ.

Parks, John M., and Sandra L. Bressler. (Univ. Miami, Coral Gables 46, Fla.) OBSERVATIONS OF JOINT FEEDING ACTIVITIES OF CERTAIN FISH-EATING BIRDS. Auk 80(2): 198-199. Apr. 1963. WR 110: 42

Several species of herons were seen feeding in association with mergansers, the herons catching fish disturbed by the mergansers. Snowy egrets followed the actions of mergansers more closely than other herons, even fighting with mergansers for a particular fish. Snowy egrets were also observed attracting fish by submerging the bill for a third of its length, extending the neck so it nearly touched the water, and repeatedly opening and closing the mandibles and thus splashing water.

Selander, Robert K., and Linda L. Kuich. (Univ. Texas, Austin.) HORMONAL CONTROL AND DEVELOPMENT OF THE INCUBATION PATCH IN ICTERIDS, WITH NOTES ON BEHAVIOR OF COWBIRDS. Condor 65(2): 73-90, 1 fig. Mar.-Apr. 1963. WR 110: 42

Redwings injected with progesterone or prolactin alone failed to show any of the processes involved in development of the incubation patch. By injecting estradiol benzoate, either alone or in combination with prolactin or progesterone, incubation patches were induced equally well in ♂ and ♀ redwings. Gross and histologic examination of the integument of brown-headed cowbirds which had received injections of estrogen, progesterone and prolactin, alone or in combination, failed to reveal any response. Likewise, nest building behavior was not developed in captive cowbirds.--From summ.

Shlapak, G. D. [FEEDING HABITS OF THE STARLING DURING THE NESTING PERIOD.] Zool. Zhur. 40(7): 1106-1108. 1961. [From Biol. Abstr. 41(3), 1963, from Referat. Zhur., Biol., 1962, no. 7I103. Transl. of Russian abstr. Original with English summ.] WR 110: 42

During May and June of 1954, 180 feed portions were recovered from nestlings of twelve nests in the Azovo-Sivashskii Preserve. Data are given on the quantity and species composition of the food. Harmful insects comprised 72.3% of the bird diet, useful insects 3%, other types 24.7%.--From abstr.

Skutch, Alexander F. (El Quizarrá, San Isidro del General, Costa Rica.) LIFE HISTORY OF THE LITTLE TINAMOU. Condor 65(3): 224-231, 1 fig. May-June 1963. WR 110: 42

Contains information on breeding behavior and biology of Crypturellus soui.

Stresemann, Erwin. (Berlin-Lichterfelde-West, Kamillen-Str. 28, Germany.) THE NOMENCLATURE OF PLUMAGES AND MOLTS. Auk 80(1): 1-8. Jan. 1963. WR 110: 4

Continued use of older terminology for avian molts and plumages is recommended rather than the adoption of the suggested terminology of P. S. Humphrey and K. C. Parkes (see WR 95: 71). "The initiators and promoters of the new nomenclature were far too optimistic when they thought that descriptive and comparative plumage studies would proceed in a more orderly fashion if they were conducted in the light of their homology concept. In my opinion the result is an artificial, man-made order, incompatible with the facts."

von de Wall, Wolfgang. DIE AUSDRUCKSBEWEGUNGEN DER MARMELENTE, ANAS ANGUSTIROSTRIS MÉNÉTR. [INTENTION MOVEMENTS OF THE MARBLED DUCKS.] J. Ornithol. 103(2/3): 150-152. 1962. [From Biol. Abstr. 42(5), 1963. (In German).] WR 110: 43

Wickler, Wolfgang. UEBER DIE GLAMMESGESCHICHTE UND DEN TAXONOMISCHEN WERT EINIGER VERHALTENSWEISEN DER VÖGEL. [ON THE EVOLUTIONARY HISTORY AND TAXONOMIC VALUE OF SOME MOTOR PATTERNS OF BIRDS.] Z. Tierpsychol. 18(3): 320-342. 1961. [From review by M. M. Nice, Bird-Banding 33(2), 1962.] WR 110: 43

Several pairs of motor patterns, each of which perform the same function "are investigated with a view to their relative phylogenetic age." The author points out the impossibility of deciding which of various patterns is the ancestral pattern of behavior. The manner in which doves and sandgrouse drink by sucking up the water has been considered an indication of relationships, yet the author notes that one primitive form of dove drinks like a goose and that certain finches drink by sucking up the water.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Kirpichev, S. P. [QUANTITATIVE COUNTS OF WINTERING BIRDS OF THE NORTHEAST PRIBAIKAL'.] Ornitologiya (Moscow) 2: 188-191. 1959. [From Biol. Abstr. 41 (2), 1963, from Referat. Zhur., Biol., 1961, no. 6D331. From transl. of Russian abstr.] WR 110: 43

Results are given for counts of wintering birds in Bagruzinskii game reservation in 1956, taken with aid of decoying procedures (i.e. observer imitated alarm signals or identifying calls of birds). This method made it possible to increase number of registered individuals more than 4 times as compared with normal counts.

Lampio, Teppo. (Perustie 20 A 30, Helsinki, Finland.) VESILINTUKANNOISTA JA NIIDEN MUUTOKSISTA ERÄILLÄ POHJOIS-KARJALAN JÄRVILLÄ. [ON THE COMPOSITION AND FLUCTUATIONS OF THE BIRD FAUNA OF SOME NORTH KARELIAN LAKES.] Suomen Riista 15: 130-141, 4 figs. 1962. [In Finnish with English summ.] WR 110: 43

Bird censuses were made at 4 lakes classified as oligotrophic, dystrophic, partly eutrophic and entirely eutrophic. Of the total observed bird population, 3.8% was on the oligotrophic lake (10.5 sq km), 1.5% on the dystrophic lake (1 sq km), 29.5% on the partly eutrophic lake (10.0 sq km) and 65.3% on the entirely eutrophic lake (10.0 sq km).--From summ.

Pavlov, A. N., and A. V. Molodovskii. (Rostov-on-the-Don Sci.-Res. Anti-Plague Inst., USSR.) [THE PREDATORY BIRDS OF MANGYSHLAK AND THEIR NUMBERS.] Zool. Zhur. 41(6): 951-954. 1962. [From Biol. Abstr. 41(2), 1963. (In Russian) with English summ.] WR 110: 43

Fauna contained many species of predatory birds but with relatively few individuals.

BIRDS--POPULATIONS & FLUCTUATIONS

Ferguson-Lees, I. J. (30 St. Leonard's Ave., Bedford, England.) CHANGES IN THE STATUS OF BIRDS OF PREY IN EUROPE. British Birds 56(4): 140-148, 6 pls. Apr. 1963. WR 110: 43

A review of the present breeding status of 39 spp. of diurnal birds of prey in Europe with a discussion of the factors which have brought about population changes of each species during the last century.--W. T. Van Velzen.

Gibb, J. A. (Dept. Sci. & Indust. Res., Lower Hutt, New Zealand.) THE IMPORTANCE OF TERRITORY AND FOOD SUPPLY IN THE NATURAL CONTROL OF A POPULATION OF BIRDS. Science Review 20(2): 20-21. [1963.] WR 110: 44

In Britain decline was observed in the population of tits (Parus sp.) during the winter months, and this decline paralleled a decline in available food supplies. The decline of food was further associated with severity of the weather. It was postulated that the birds were dying from food scarcity and that the assumed mortality was associated with density of the birds and depletion of their food supplies. The birds were feeding largely (25% of total food) on eucosmid moth larvae (Ernarmonia conicolana) and in 5 successive winters ate 50%, 23%, 55%, 54% and 60% of these larvae present.

Havlín, Jiri. (Lab. Vert. Zool. Czechslovak Acad. Sci., Lidická 79, Brno.) VĚKOVÉ SLOŽENÍ A ÚRMTNOST POPULACÍ KOSA ČERNÉHO (TURDUS MERULA L.). [AGE STRUCTURE AND MORTALITY RATE IN BLACKBIRD POPULATIONS.] Zoologické Listy 11 (3): 279-285, 1 fig. 1962. [In English with Czech summ.] WR 110: 44

Analysis was made of 521 recovery records of blackbirds (Turdus merula) banded in Czechoslovakia. Of the original sample, 66.5% were recovered in the first year after banding. One bird attained an age of approximately 10 yrs. Blackbirds of earlier broods attained a higher average age than those of later broods. The average life span was less than 1 yr.

Speirs, J. Murray. (R. R. # 2, Pickering, Ontario, Canada.) SURVIVAL AND POPULATION DYNAMICS WITH PARTICULAR REFERENCE TO BLACK-CAPPED CHICKADEES. Bird-Banding 34(2): 87-93, 1 fig. Apr. 1963. WR 110: 44

It was calculated that the first year mortality of chickadees must be about 89%. The chance of a given chickadee egg hatching and the hatchling surviving to breeding age is not much greater than 1 in 10.--From summ.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Anonymous. WOOD PIGEON NEST DESTRUCTION. Agriculture 69(3): 146. 1962. [From J. Animal Ecol. 32(1), 1963.] WR 110: 44

The vital factor in controlling wood pigeons by destroying nests is to follow up the first operation with another 6 weeks later. Shooting is complementary to nest destruction.

Mackay, R. H. (Canadian Wildl. Serv., Univ. B. C., Vancouver.) THE CURRENT STATUS OF CROP DEPREDATION CONTROL IN WESTERN CANADA. 25th Fed.-Provincial Wildl. Conf. (Ottawa, Canada), 1961. p. 48-53. 1962. WR 110: 44

The problem of preventing waterfowl and crane damage to cereal crops in the prairie provinces is discussed. Acetylene exploders (as currently available) are unsatisfactory because of too frequent inoperation. The possibility is considered of using fields for production of waterfowl food or of buying unharvested crops located in critical areas. The use of crop insurance is mentioned.

Wood Preservation News. HOW TO PREVENT WOODPECKER DAMAGE. Wood Preserv. News 40(10): 14-15, 1 photo. 1962. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 24 Dec. 1962.] WR 110: 44

Brief details of 2 repellents developed by U. S. firms against woodpeckers damaging wooden telegraph and power poles: (1) a penetrating PCP grease that can be brushed on to poles, and is not fatal to the birds; (2) an improved industrial, 9-gauge, galvanized woven-steel wire mesh wound horizontally round the pole with 2-in. overlaps. These precautions appear very successful in thwarting the woodpecker's marked predilection for freshly pressure-preserved poles.--Courtesy/ Frank M. Johnson.

Young, Howard. (Wis. State Coll., La Crosse.) AGE-SPECIFIC MORTALITY IN THE EGGS AND NESTLINGS OF BLACKBIRDS. Auk 80(2): 145-155, 4 figs. Apr. 1963. WR 110: 45

Nestling mortality exceeded egg loss in 518 nests of the red-winged and 116 of the yellow-headed blackbird. Predation was the most common cause of mortality.--From summ.

BIRDS--PARASITES AND DISEASES

Bashikirova, E. Y. [THE NEMATODE FAUNA OF BIRDS OF THE PRIMORSK REGION.] Trudi Gelmintol. Lab. Akad. Nauk. SSSR 10: 46-57. 1960. [From Helminthol. Abstr. 32(1), 1963. In Russian.] WR 110: 45

Of 558 birds (87 spp.) examined, 195 were infected with nematodes. Brief descriptions for some of the 27 nematodes found and a list of nematodes under their hosts are given.

Cook, Ian. (Queensland Inst. Med. Res., Brisbane, Australia.) ORNITHOSIS IN FERAL PIGEONS. Australian J. Exptl. Biol. & Med. Sci. 40(5): 389-394. 1962. [From Biol. Abstr. 42(5), 1963.] WR 110: 45

Serological evidence of ornithosis was found in 56% of 57 feral pigeons (Columba livia) trapped at Ipswich, Queensland. Virus strains isolated in mice from 4 of 11 pools of pigeon organs were identified as members of the psittacosis-lymphogranuloma group by complement-fixation tests and are considered to be strains of ornithosis virus.--From auth. abstr.

Gusev, V. M. BIRDS AS A FACTOR CONTRIBUTING TO THE EXPANSION OF THE RANGE LIMITS OF CERTAIN SPECIES OF ECTOPARASITES. Zool. Zhur. 41(7): 1061-1066. 1962. [Listed in Consolidated Translation Survey 59, 1962. Eight page translation from Russian available from Dept. Commerce, Office Tech. Serv., Washington 25, D. C.] WR 110: 45

Mikhailova, R. S., E. V. Pokrovskaya, and V. M. Gusev. [THE POSSIBLE ROLE OF CERTAIN WILD BIRDS IN THE EPIZOOTIOLOGY OF LEPTOSPIROSIS.] Zool. Zhur. 40(11): 1738-1740. 1961. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1962, no. 12K182. Transl. of Russian abstr. Original with English summ.] WR 110: 45

Positive agglutination and lysis reactions were found in rooks during a spring and fall check involving 273 birds of 19 spp. In spring checks involving 138 birds of 8 spp. positive reactions were found in rooks and a stone curlew.

Owen, R. Wynne, and R. T. Pemberton. (Univ. Leeds, Leeds, England.) HELMINTH INFECTION OF THE STARLING (STURNUS VULGARIS L.) IN NORTHERN ENGLAND. Proc. Zool. Soc. London 139(4): 557-587. Dec. 1962. WR 110: 45

Comprehensive data have been compiled from the examination of 135 juvenile and 223 adult starlings from Northern England over a period of nineteen months. Only four of the fifteen species recorded are found in more than 25 per cent of juveniles or adults. During the first quarter of the year the incidence of infection is low and the numbers of parasites are small, but in the second quarter the incidence and intensity of infection increase rapidly to their maximum levels. Newly fledged juveniles, when they first appear at the end of May, are also universally and heavily infected. The incidence and level of infection in both groups gradually decrease during the remaining six months of the year. The numbers of parasite species and individuals appear to be related to the incidence of infection. When the incidence is low infected birds always harbor small numbers of parasites; when it is high a large proportion of birds carry heavy or very heavy infections.--From abstr.

GAME BIRDS--GENERAL

Eley Game Advisory Station. (Fordingbridge, Hampshire, England.) HOW TO DISTINGUISH SEX AND AGE IN GAMEBIRDS. Eley Game Advisory Serv. (formerly I.C.I. Game Serv.), Booklet 9. 11 p., illus. Revised Spring 1963. WR 110: 46

Aging and sexing of mallards and upland game birds by cloacal examination and plumage characteristics is explained for use of preserve operators.

QUAIL

Klimstra, W. D., and V. C. Ziccardi. (Southern Ill. Univ., Carbondale.) NIGHT-ROOSTING HABITAT OF BOBWHITES. J. Wildl. Mgmt. 27(2): 202-214, 4 figs. Apr. 1963. WR 110: 46

Abstract: A study of the night-roosting headquarters of bobwhites (Colinus virginianus) to determine roosting requirements was conducted in Jackson and Williamson counties, southern Ill., during Dec.-Apr., 1953-54, and Dec.-Mar., 1954-55. Thirty-six coveys and 58 headquarters were included. Sixty-eight percent of the headquarters were on medium or low elevations; 56 percent of the shifts made by bobwhites were from high to medium or low elevations. Sixty-eight percent of the headquarters had good drainage; 60 percent had a southern, and 39 percent a southwestern exposure. Sixty percent of the roosts were on bare ground, 31 percent where only duff was present. Herbaceous plants were most frequently used as roosting cover. Mean height was 59 cm and mean stem density was 16.9 per square foot. The bobwhites showed a strong preference for vegetation with low, sparse, open canopies. The mean light obstruction value of the canopy was 14.3 percent in early winter and 9.3 in late winter. In the 58 headquarters, 65-100 percent of the wind movement was obstructed at ground level; the 2-year average was 92 percent. Covey movements were related particularly to increased total daily wind movement and unusually inclement weather. Changes in annual land use result in shifts of roosting areas but not necessarily in reduced populations. Current changes in farming systems reduce the amount of suitable quail habitat. Measures for provision of improved, quail roosting habitat are listed and discussed.

Maglione, E. [AN OBSCURE DISEASE OF VIRGINIAN BOB-WHITE QUAIL (COLINUS VIRGINIANUS): NODULES AND ULCERS ON LEGS AND HEAD.] Ann. Fac. Med. Vet. Torino 11: 169-174. 1961. [From Vet. Bull. 33(4), 1963. In Italian with summaries in English, French and German.] WR 110: 46

The disease affected 30-40% of birds aged 3-4 years on one breeding farm. Attempts to transmit the disease by inoculation of blood or lesion suspension into quail and other birds failed. Various bacteria were present in the lesions.

Robinson, Thane S. (Western Mich. Univ., Kalamazoo.) EGG PRODUCTION BY BOBWHITES UNDER A FIFTEEN-HOUR PHOTOPERIOD. J. Wildl. Mgmt. 27(2): 215-220. Apr. 1963. WR 110: 46

Abstract: Twenty bobwhites (Colinus virginianus) of two age groups were maintained where the only known environmental variable was photoperiod, originally set at 12 hours per day (Mar. 14, 1962), lengthened to and then maintained at 15 during which period laying began, abruptly lowered to 14 (June 13, 1962), and gradually reduced to 9. Second-year ♀♀, with a mean weight of 218.6 grams, produced 143 eggs averaging 9.65 grams in weight. First-year ♀♀ had a mean weight of 194.4 grams and produced 96 eggs averaging 7.78 grams in weight. The older birds had a longer period of productivity and laid eggs of more uniform size. The weight of the eggs of the young birds increased as the simulated breeding season progressed. Cloacal temperatures increased in both age groups during egg production; that of young birds was slightly, but consistently, higher than that of older birds. The data suggest that the stress of egg production is more burdensome to young ♀ bobwhites than to older ones.

Rosene, Walter, Jr., and Daniel W. Lay. (U. S. Bur. Sport Fisheries & Wildl., Gadsden, Ala.) DISAPPEARANCE AND VISIBILITY OF QUAIL REMAINS. J. Wildl. Mgmt. 27(1): 139-142. Jan. 1963. WR 110: 47

"We conclude that, in summer at least, (1) failure to find dead quail, even with search, is poor evidence that no dead quail are present, and (2) finding even a small or moderate number of dead quail or their remains is reason to suspect a rather heavy mortality."

PHEASANTS

Andrews, Richard D., Arnold O. Haugen, and Loyd Y. Quinn. (Univ. Ill., Dixon Springs Expt. Sta., Robbs.) ANTIBODIES OF PULLORUM AND NEWCASTLE DISEASE VIRUS IN PHEASANTS. J. Wildl. Mgmt. 27(2): 220-224. Apr. 1963. WR 110: 47

Abstract: Whole-blood saturated serodiscs and fluid serum collected from 446 wild and 435 game-farm Iowa pheasants (Phasianus colchicus) were tested for pullorum disease, Newcastle disease, Eastern and Western equine encephalomyelitis, PPLO disease (pleuopneumonia-like organisms), infectious bronchitis, and quail bronchitis (CELO). Serum samples from three pheasants on private game farms were positive to tests for Newcastle disease, whereas samples from wild pheasants were all negative. Four serum samples from pheasants on private game farms were suspect for pullorum, and 15 pullorum-positive whole-blood samples were secured from wild birds. A limited number of samples were tested for other diseases; 2 of 61 were positive for Eastern equine encephalomyelitis and 7 of 65 to CELO. All 93 samples tested for Western equine encephalomyelitis, infectious bronchitis, and PPLO were negative.

Breitenbach, Robert P., Clarence L. Nagra, and Roland K. Meyer. (Univ. Mo., Columbia.) EFFECT OF LIMITED FOOD INTAKE ON CYCLIC ANNUAL CHANGES IN RING-NECKED PHEASANT HENS. J. Wildl. Mgmt. 27(1): 24-36, 4 figs. Jan. 1963. WR 110: 47

Abstract: Annual changes in body weight, food intake, lipid indices, egg laying, and organ weights are reported for ring-necked pheasant (Phasianus colchicus) hens maintained on wire, on ad libitum and limited amounts of a high protein diet. Birds were autopsied at 3-month intervals for organ weight data. In control birds, body weights rose gradually throughout fall and early winter, rapidly increased in Feb. and Mar., and reached a maximum in Apr. Food intake in the control pheasants closely paralleled the changes in body weights, but greatest intake occurred a month later coincident with the period of maximum egg production. Birds on limited intake maintained their body weight until the early reproductive season when a decline in weight occurred. Egg laying was markedly depressed and delayed in limited intake birds, although egg size and composition were normal. Laying in limited intake pheasants was 9 percent of that of control birds. Depot fat was found to parallel closely the changes in body weight and food intake. Liver lipids were lower in limited intake birds during all but the reproductive season. Plasma lipid values were statistically higher in limited intake birds during the nonreproductive season. The liver and intestine weights were greater in the limited intake birds. It is suggested that these data represent changes which help increase alimentary efficiency.

Eley Game Advisory Station. (Fordingbridge, Hampshire, England.) PHEASANT REARING. Eley Game Advisory Serv. (formerly I.C.I. Game Serv.), Booklet 8. 48 p., illus. Revised Spring 1963. WR 110: 47

This well-illustrated booklet describes 4 methods of rearing pheasants for release on shooting preserves: (1) open rearing field with coops and broodies, (2) movable pens with coops and broodies, (3) small brooder houses with grass runs, and (4) intensive-system using brooders with wire floors or deep litter. The young birds are released at 8 weeks of age, and the average rate of recovery is about 35% the first year, this figure rising to about 40% by the end of the second season.

Ellis, Jack A., and William L. Anderson. (Ill. Nat. Hist. Surv., Urbana.) ATTEMPTS TO ESTABLISH PHEASANTS IN SOUTHERN ILLINOIS. J. Wildl. Mgmt. 27(2): 225-239, 6 figs. Apr. 1963. WR 110: 48

Abstract: Releases of 1,726 pheasants (Phasianus colchicus) of Calif. stock were made in the spring and late summer of 1956 near Neoga, Cumberland County, and of 480 in Feb., 1957, near Bellmont, Wabash County. The areas are south of the contiguous range occupied by pheasants in Ill. Pheasants on the Neoga area persisted at a low but stable level of abundance until the fall of 1958, after which a drastic reduction in numbers occurred. From 1957 to 1959, the population of pheasants at Bellmont showed a gradual decline. At the end of the third breeding season, it was apparent that populations on both areas were at such low levels of abundance that recovery was highly improbable. Clutch sizes and survival of chicks were similar to those reported from thriving populations. Brood phenology indicated that high air temperatures probably did not inhibit production on the two areas. The percentage increase in numbers of pheasants between spring and fall was insufficient to perpetuate the populations. Losses in the populations from fall to the following breeding season were considered excessive when compared to those from thriving populations. Thus, factors affecting survival of the pheasants from late summer to the following breeding season were apparently more critical in suppressing the establishment of these populations than factors affecting reproduction.

Hanus, V. PHEASANT MANAGEMENT IN CZECHOSLAVAKIA. World Forestry Congr. Proc. 5(3): 1773-1775. 1960 [1962]. [From Bibliog. Agr. 27(2), 1963.] WR 110: 48

Keck, A. L. (Colo. State Forestry Serv., Fort Collins.) WE CAN HAVE MORE PHEASANTS / PLANTINGS CAN PAY OFF. Colo. Outdoors 12(2): 7-11, illus. Mar.-Apr. 1963. WR 110: 48

Grasses, legumes, shrubs and trees recommended as good pheasant cover in Colo. are listed.

Koehler, Witold. WPROWADZENIE BAŻANTA DO POLSKI. [INTRODUCTION OF THE PHEASANT IN POLAND.] Chrońmy Przyrode Ojczysta 18(3): 26-30, 54. May-June 1962. [In Polish with English summ.] WR 110: 48

The author is of the opinion that it is wrong to enrich the native fauna by alien elements [pheasants] at the cost of the extermination of indigenous species. Predators serve as bioregulators of the small rodents in the environment. The "regardless and shortsighted application of such measures as the polytoxic chemical control of noxious animals" is criticized.

Sandfort, Wayne. (Dept. Game & Fish, 1530 Sherman St., Denver 1, Colo.) WE CAN HAVE MORE PHEASANTS. Colo. Outdoors 12(2): 1-6, 5 figs. Mar.-Apr. 1963. WR 110: 48

Pheasants were first introduced into Colo. in 1885. Pheasant hunting was first permitted in 1929. There have been annual open seasons since 1933. During the period 1957-61 an average of 92,270 persons hunted pheasants annually. For this period the average annual pheasant harvest was 206,235. In Colo. pheasant management, the primary need is more cover (chiefly nesting cover). It is recommended that hunters should make monetary payments to farmers for the privilege of hunting on their land. State and federal legislation is recommended to provide subsidy payments for practices favorable to habitat maintenance and production. It is recommended that current subsidies for practices destroying wildlife habitat and increasing farm surpluses be curtailed.

Westerskov, Kaj. (Dept. Internal Affairs, Wellington, New Zealand.) SUPERIOR SURVIVAL OF BLACK-NECKED OVER RING-NECKED PHEASANTS IN NEW ZEALAND. J. Wildl. Mgmt. 27(2): 239-245, 2 figs. Apr. 1963. WR 110: 48

Abstract: In New Zealand, banding and liberation, under comparable conditions, of 3,793 cock pheasants of genotypic black-necks (Phasianus colchicus colchicus) and ring-necks (Phasianus colchicus torquatus) of selected age groups showed a significantly better survival of the black-necked pheasant.

The overall recovery rate for black-necks was 17.3 percent as compared with 11.9 percent for ring-necks. Survival from year to year and length of life were highest in black-necks. The weighted mean annual mortality of the ring-neck was 73 percent and, of the black-neck, 60 percent. Data for 3,146 hen pheasants corroborate the findings for cocks although recoveries are fewer. It appears that every black-neck hen needs to produce sufficient young to insure survival of 2.5 young to the age of 12 weeks when they become independent, while ring-neck hens must produce 4.1 young. Brood counts of wild phenotypic ring-necks in New Zealand showed that an average of 3.5 young per brood reach 12 weeks of age. Genotypic ring-necks of strains available are thus barely capable of maintaining populations. The present wild stock of pheasants is a hybrid population, phenotypically of a dark ring-neck strain, the dark coloration of both cock and hen believed to originate from influence of the better surviving black-necks. White collars persist in populations of otherwise black-neck-looking cocks as the white collar is dominant, pure black-necks being recessive in all crosses involving ring-necks.

GROUSE, PARTRIDGE, ETC.

Bizeau, Elwood. (Idaho Fish & Game Comm., 518 Front St., Boise.) CHUKAR PARTRIDGE IN IDAHO. Idaho Wildl. Rev. 15(1): 3-4, illus. Jan.-Feb. 1963. WR 110: 49

Prior to 1950 fewer than 3,000 chukar partridges had been released in Idaho. During 1950-62, releases totalled 19,889. The annual mail hunter questionnaire survey indicated a harvest of 69,000 chukars in 1958.

Christensen, Glen C. (Nev. Fish & Game Dept., Reno.) SAND GROUSE RELEASED IN NEVADA FOUND IN MEXICO. Condor 65(1): 67-68, 1 fig. Jan.-Feb. 1963. WR 110: 49

Indian sand grouse (Pterocles exustus hindustan) were trapped from India and released on the desert regions of southwestern U. S. Two of these birds were recovered in Mexico after having returned to the same latitude at which they were trapped in India. None of the 1,400 birds released was found at release sites more than 2 months after release.

Helminen, Matti, and Juha Viramo. METSON JA TEEREN SYKSYISESTÄ ELÄINRAVINNOSTA. [ANIMAL FOOD OF CAPERCAILLIE (TETRAO UROGALLUS) AND BLACK GROUSE (LYRURUS TETRIX) IN AUTUMN.] Suomen Riista 15: 142-148, 2 figs. 1962. [In Finnish with English summ.] WR 110: 49

This is a Finnish version of a report published in English by the same authors in Ornis Fennica 39, 1962.

Mackie, Richard J., and Helmut K. Buechner. (Mont. Fish & Game Dept., Lewistown.) THE REPRODUCTIVE CYCLE OF THE CHUKAR. J. Wildl. Mgmt. 27(2): 246-260, 8 figs. Apr. 1963. WR 110: 49

Abstract: This is a 2-year study (1958-60) of the reproductive cycle of the chukar (Alectoris graeca) in southeastern Wash. Pairing occurred from early Feb. to late Mar., with birds over 1 year of age being the first to form pairs. The pair bond appeared to endure until early in the incubation period. Testicular recrudescence began during late Jan., progressing at a relatively gradual and constant rate; the full breeding condition appeared to be reached by late Mar. and persisted about 3 months; and regression was two-phased, occurring largely within 4 to 6 weeks. Ovarian and oviducal cycles were timed similarly. Recrudescence began about Feb. 1 and progressed in two phases, a period of gradual change followed by a period of rapid development before the onset of egg laying. Most females laid the first egg between mid-Mar. and mid-Apr. Six captive females laid 221 eggs at a mean rate of 1.3 days per egg. Renesting persisted following loss of eggs prior to hatching; some females continued to lay until mid-July. Dates for initiation of incubation ranged from about Apr. 19 to July 19, hatching from about May 1 to mid-Aug. (Peak about June 21). Regression of ovaries and oviducts occurred in two stages, a short period of extremely rapid change during incubation followed by a long period of gradual change.

Mussehl, Thomas W., and Thomas H. Leik. (Mont. Game & Fish Dept., Hamilton.) SEXING WINGS OF ADULT BLUE GROUSE. J. Wildl. Mgmt. 27(1): 102-106, 1 fig. Jan. 1963. WR 110: 50

Abstract: Methods are described for determining the sex of adult blue grouse (Dendragapus obscurus) wings collected from hunters. This refinement is used together with the known method of separating juvenile wings from adult wings for determining age and sex composition of birds bagged. In the fall upward migration, blue grouse adult males precede females with broods; this often results in a differential harvesting of adult males and females. This makes it desirable to express blue grouse productivity as the number of juveniles per adult female because of the similarity in their altitudinal distribution. Most adult wings can be "sexed" by color differences alone. An abundance of mottling of the marginal coverts at the base of the alula aids in distinguishing female wings. Statistically significant differences in the length of primary feathers of adult males and females allow use of a discriminant function for determining sex of adult wings. This discriminant function is described.

Rajala, Paavo. METSON, TEEREN JA RIEKON ELINTAVOISTA VARHAISESSA POIKUEVAIHEESSA. [ON THE ECOLOGY OF THE BROODS OF CAPERCAILLIE (TETRAO UROGALLUS), BLACK GROUSE (LYRURUS TETRIX), AND WILLOW GROUSE (LAGOPUS LAGOPUS). Suomen Riista 15: 28-52, 12 figs. 1962. [In Finnish with English summ.] WR 110: 50

Based on observations of both naturally and artificially reared birds, much information is given on behavior and development of temperature control of young grouse.--From summ.

Rajala, Paavo. METSÄKANALINTUJEN POIKUEARVIOINNISTA. [ON THE ESTIMATION OF BROOD DENSITY OF THE TETRAONIDS.] Suomen Riista 15: 175-180, 1 fig. 1962. [In Finnish with English summ.] WR 110: 50

A census of grouse broods was made by 3 observers walking 20 meters apart counting all grouse broods observed. The last week of July to the end of Aug. was considered the best time for estimation of nesting success in northern Finland, whereas the census may be commenced in mid-July in southern Finland. Transects should be at least 60 km long in northern and 50 km in southern Finland.--From summ.

Seiskari, Pertti. ON THE WINTER ECOLOGY OF THE CAPERCAILLIE, TETRAO UROGALLUS, AND THE BLACK GROUSE, LYRURUS TETRIX, IN FINLAND. Papers on Game Res. (Helsinki) 22. 119 p., 45 figs. 1962. WR 110: 50

This comprehensive field study and review of the literature on the capercaillie and black grouse covers the following subjects: seasonal changes in behavior and habitat, structure of the winter habitat, food and shelter (the decisive environmental factors in winter), mechanisms of the selection of winter food, external factors influencing composition of winter food, winter food supplies, position of the capercaillie and black grouse in the winter ecosystem, and effect of changes in structure of the tree stand on habitat requirements. Extensive bibliography.

Watson, George E. (U. S. Natl. Museum, Washington 25, D. C.) INCOMPLETE FIRST PREBASIC MOLT IN THE CHUKAR PARTRIDGE. Auk 80(1): 80-81, 1 fig. Jan. 1963. WR 110: 50

The presence of mottled juvenile secondaries has been used by R. H. Smith (see WR 102: 58) as a character for aging chukar partridges (Alectoris graeca) during early fall of the year of hatching. Two cases of irregularity of molting caged birds are described. These irregularities would interfere with accurate age determinations in some populations of this species.

TURKEY

Lewis, James C. (Tenn. Game & Fish Comm., Crossville.) OBSERVATIONS ON THE WINTER RANGE OF WILD TURKEYS IN MICHIGAN. J. Wildl. Mgmt. 27(1): 98-102, 1 fig. Jan. 1963. WR 110: 51

Abstract: The daily home range of 21 flocks of 132 wild turkeys (Meleagris gallapavo) was studied in Allegan County, Mich., during the winter of 1957-58. The area of the daily home range seemed to vary inversely with snow depth and directly with temperature; however, positive relationships were somewhat obscured by other influencing factors. Twenty-nine measurements of the area contained within the limits of the daily movements of turkey flocks varied from 2 to 160 acres and averaged 49 acres. The home range used throughout the winter averaged 683 acres for 8 flocks of gobblers only, 435 acres for 7 flocks of hens only, and 492 acres for 6 flocks of mixed sexes. Flocks remained individually identifiable throughout the winter either by flock composition or the discreteness of flock ranges. The range of 86 percent of 132 turkeys bordered streams or lakes, and 74 percent of 19 winter roosts were found there. It was hypothesized that an efficient and economical census of turkeys in winter could be based on a search along streams and borders of lakes for turkeys and for their signs in snow.

Maxfield, Burton G., W. Malcolm Reid, and Frank A. Hayes. (Charles Pfizer & Co., Inc., Cullman, Ala.) GASTROINTESTINAL HELMINTHS FROM TURKEYS IN SOUTHEASTERN UNITED STATES. J. Wildl. Mgmt. 27(2): 261-271, 1 fig. Apr. 1963. WR 110: 51

Viscera from 390 wild turkeys (Meleagris gallopavo) from 31 collection areas in 10 southeastern states, from 76 pen-raised wild turkeys from Beaufort County, S. C., and from 68 domestic turkeys from 7 farm areas located in the states of Fla., Va., and W. Va. were examined for helminths. Species of helminths and infection percentages for wild turkeys and pen-raised wild turkeys are tabulated. The high incidence of parasitism in wild and pen-raised wild turkeys indicates a need for consideration of parasites in wild turkey management and research programs.--From abstr.

Schleidt, Wolfgang M. REAKTIONEN VON TRUTHÜHNERN AUF FLIEGENDE RAUBVÖGEL UND VERSUCHE ZUR ANALYSE IHRE AAM'S. [REACTIONS OF TURKEYS TO FLYING PREDATORS AND EXPERIMENTS ON THE ANALYSIS OF THE INNATE RELEASING MECHANISM.] Z. Tierpsychol. 18(5): 535-560. 1961. [From Bird-Banding 33(3), 1962. (In German) with English summ.] WR 110: 51

Schleidt tested long- and short-necked models of birds by passing the models over turkeys and noting the responses of the turkeys. Speed of movement of the models and their size were found to be important, but the models' figuration relative to long or short neck was found to be unimportant. Infrequently seen models produced the strongest response. The author concludes: "As the experimental animals of Lorenz and Tinbergen had more often seen flying ducks and geese than birds of prey prior to the model experiments, the resultant intensity of reactions to 'short-neck' models can be explained by the fact that the animals had previously become adapted to 'long necks.'"--From review by M. M. Nice.

DOVES AND PIGEONS

Anonymous. THE MOURNING DOVE IN CALIFORNIA. Outdoor Calif. 23(11): 7-10, illus. Dec. 1962. WR 110: 51

During its 1962 session, Calif. drafted a resolution to be submitted to U. S. lawmakers asking for defeat of a bill prohibiting hunting of mourning doves in the U. S. The resolution stated that there are approximately 18 million doves in Calif. on each 1 September of which 6 million could be safely harvested. Actually only about 2 million are harvested each year, and hunting recreation is thus provided to 200,000 persons. The mourning dove population has shown some increase in Calif. since 1954, although the number of hunters has markedly increased in the same period.

Frankel, Arthur I., and Thomas S. Baskett. (Univ. Ill., Urbana.) COLOR MARKING DISRUPTS PAIR BONDS OF CAPTIVE MOURNING DOVES. J. Wildl. Mgmt. 27(1): 124-127. Jan. 1963. WR 110: 52

"Our experiments showed that marking female doves' heads copiously with yellow airplane dope adversely affected pair bonds, resulting in increased perch cooing and virtual cessation of nest cooing by the males. Changes in vocalization were accompanied by other obvious behavioral changes that were not measured quantitatively."

Johnston, Richard F. (Univ. Kans., Lawrence.) STIMULI FOR OVULATION IN THE ROCK DOVE. Condor 65(1): 68-69. Jan.-Feb. 1963. WR 110: 52

The presence of a completed nest is not necessary for ovulation. The behavior of the male in bringing nest material and the opportunity thus offered the female to handle this material, however, may influence ovulation.

Kaczynski, Charles F., and William H. Kiel, Jr. (Patuxent Wildl. Res. Center, Laurel, Md.) BAND LOSS BY NESTLING MOURNING DOVES. J. Wildl. Mgmt. 27(2): 271-279. Apr. 1963. WR 110: 52

Abstract: Nestling mourning doves (Zenaidura macroura) were banded and checked for band loss prior to fledging at Parchman, Miss., during the months of June-Aug., 1960. Three hundred seventy-seven nestlings 4-6 days of age were banded, 117 with size 3 bands, 120 with size 3A bands, and 140 with size 3A bands secured by Dalzoflex tape. Two hundred twenty nestlings 7-9 days of age were banded, 114 with size 3 bands and 106 with size 3A bands. In the 4- to 6-day age group, 66.3 percent of the size 3A bands were lost. This was a statistically significant departure from the 7.7 percent loss of size 3 bands. No taped bands were lost. However, predators ate 13.8 percent of the nestlings with taped bands and significantly fewer of the nestlings banded without tape. In the 4- to 6-day age group, percentages of nestlings known to be available for band recovery at 9 days or older were: size 3, 69.2 percent; size 3A with tape, 59.0 percent; size 3A, 25.8 percent. In the 7- to 9-day age group, there was a 3.3 percent loss of size 3A bands and no loss of size 3 bands. The minimum age at which nestlings were banded without subsequent loss of bands was 6 days for size 3 and 8 days for size 3A.

Koivisto, Ilkka. KYYHKYNMETSÄSTYKSEN AJANKOHDASTA UUDELTAMAALTA VUOSINA 1960 JA 1961 KERÄTYN AINEISTON VALOSSA. [ON THE PIGEON HUNTING PERIOD IN THE LIGHT OF DATA COLLECTED IN UUSIMAA IN 1960 AND 1961.] Suomen Riista 15: 77-82, 2 figs. 1962. [In Finnish with English summ.] WR 110: 52

Wings and crops of pigeons were collected from hunters. Of 91 adult specimens, 52 (57%) had eggs or young. Since nesting ♀♀ join flocks, shooting them cannot be avoided when hunting flocks. The adults were less prone than young, however, to join flocks.--From summ.

Matthews, Barbara Marshall. (Univ. Puerto Rico, Rio Piedras.) A CASE OF JOINT NIDIFICATION IN RING DOVES. Auk 80(1): 48-51. Jan. 1963. WR 110: 52

Summary: This paper describes what seems to be the first recorded instance of cyclic repetition of joint nidification of ring doves (Streptopelia risoria). Two cycles and the beginning of a third were observed. A male's nocturnal "incubation" of an empty nest, as well as two single males "incubating" jointly were also noted, apparently for the first time.

Nicolai, Jurgen. (Inst. Verhaltungs, Seewiesen, Germany.) ÜBER REGEN-, SONNEN- UND STAUBBADEN BEI TAUBEN (COLUMBIDAE). [CONCERNING RAIN-, SUN- AND DUST BATHS OF DOVES (COLUMBIDAE).] J. Ornithol. 103(2/3): 125-139. 1962. [From Biol. Abstr. 42(5), 1963. (In German) with English summ.] WR 110: 52

Observations were made of 19 species of doves. All 3 behavior patterns are widely distributed within the Columbidae, but their thresholds for release vary among the different species. The movements and postures are identical in rain- and sunbathing in all species studied.--From auth. summ.

Anderson, A. (Culterty Field Sta., Univ. Aberdeen, Scotland.) PATAGIAL TAGS FOR WATERFOWL. J. Wildl. Mgmt. 27(2): 284-288, 2 figs. Apr. 1963. WR 110: 53

Abstract: Waterfowl were marked for identification in the field by attaching tags of semirigid plastic to the patagium of each wing. A nickel-chrome pin piercing the patagium and two plastic washers secure the tag. Two or more self-adhesive color strips of reflective Scotchlite or non reflective Scotchcal are fastened to the tag. In 2 years of field trials, the tag has been tested on 10 mallards (Anas platyrhynchos) identified 303 times, 123 common eiders (Somateria mollissima) 634 times, and 11 gallinules (Gallinula chloropus) 142 times. The tags have also been used on fulmars (Fulmarus glacialis) and black-headed gulls (Larus ridibundus). In sunlight, bicolor combinations can be read up to 50 meters with 8 X 30 binoculars and up to 150 meters with a 25X telescope.

Beshears, W. Walter, Jr. (Ala. Dept. Conserv., 64 N. Union St., Montgomery.) PRACTICE CONSERVATION IN ACTION, START A WOOD DUCK HOUSING PROJECT. Ala. Conserv. 33(1): 8-9, 23, 25, 4 figs. Dec. 1962-Jan. 1963. WR 110: 53

Specifications, construction, and maintenance of two types of nesting boxes (elliptical entrance wooden box and elliptical entrance metal box) are included.

Britt, Ralph E. (Pa. Game Comm., Harrisburg.) PENNSYLVANIA'S MALLARD PROGRAM. Modern Game Breeding 32(12): 17. Dec. 1962. WR 110: 53

Since 1951 more than 93,000 mallards were reared and released at age of 5 weeks. Wing-clipped females are kept in open-topped pens, and fertilization of the females is provided by wild drakes. Eggs are hatched in an incubator. Hatching of incubated eggs amounted to 81.2% in 1962, and 92.2% of the eggs were fertile.

Cornwell, George, and Rolf Hartung. (Univ. Mich., Ann Arbor.) A HOLDING PEN FOR DIVING DUCKS. J. Wildl. Mgmt. 27(2): 290-292, 2 figs. Apr. 1963. WR 110: 53

Plans and descriptions of a pen capable of accommodating 10 diving ducks. "This pen may be built easily by two inexperienced men in half a day. Its simplicity of construction, low cost of materials, mobility, and experimental adaptability lead us to believe that it may be of use to other researchers."

Eltringham, S. K. (King's Coll., London, England.) THE BRITISH POPULATION OF THE MUTE SWAN IN 1961. Bird Study 10(1): 10-28, 4 figs. Mar. 1963. WR 110: 53

Aerial and ground surveys were made of mute swan populations in England and Scotland in 1961. The data were compared with data from similar counts made in 1955. No significant change in numbers was indicated. Fifty-seven clutches contained an average of 6.0 eggs per clutch. There was an average of 4.5 young in 510 broods, mostly less than 1 month old.

Erickson, Ray C. (US F&WS, Washington 25, D. C.) OIL POLLUTION AND MIGRATORY BIRDS. Atlantic Nat. 18(1): 5-14, 5 figs. Jan.-Feb. 1963. WR 110: 53

The problem of water bird losses from oil pollution can be greatly minimized by controlling release of oil onto the water. Such control would not completely eliminate the problem since both accidental and natural seepages of oil sometimes occur. An International Convention for the Prevention of the Pollution of the Sea by Oil is pending, but it has not yet been ratified by the U. S. Existing laws are often poorly enforced by state and local governments.

Gallop, J. B. (Canadian Wildl. Serv., Saskatoon, Saskatchewan.) THE FALL RECOVERIES OF YOUNG MALLARDS BANDED AT KINDERSLEY, SASKATCHEWAN. Blue Jay 21 (1): 7-10, 1 fig. Mar. 1963. WR 110: 53

A total of 1104 recoveries were obtained in the hunting seasons immediately following banding of 13,244 pre-flight mallards. Of the total recoveries, 35% were birds shot in Canada. The remainder were from the U. S. (except for one report from Mexico). Half of U. S. recoveries were from the Mississippi

Flyway, 40% from Central, 9% from Pacific and less than 1% from the Atlantic Flyway. Of Canadian recoveries, 36% came from the area within 10 miles of the banding place. Each year some recoveries were made in a northerly direction from the banding place, the most distant being 280 miles northwestward.

Grenquist, Pekka. (Finnish Game Res. Inst., Helsinki, Finland.) TELKÄN PESÄKOLOKILPAILIJOISTA SAARISTOSSA. [ON THE NESTING COMPETITORS OF THE GOLDENEYE (BUCEPHALA CLANGULA) IN THE ARCHIPELAGO.] Suomen Riista 15: 83-98, 3 figs. 1962. [In Finnish with English summ.] WR 110: 54

About 50 nesting boxes for the goldeneye were under observation during 1954-1962, and competition was observed from the goosander (Mergus merganser), stock dove (Columba oenas), starling (Sturnus vulgaris), jackdaw (Corvus monedula), tawny owl (Strix aluco) and white wagtail (Motacilla alba). There were 25 clutches common with the goldeneye and the goosander (11 incubated by goosander, 12 abandoned, 2 data incomplete). In the common clutches incubated by the goosander, the goldeneyes hatched first and left the nest on own initiative and died or followed goosander females. The stock dove performed the incubation duties in 6 common nests and the goldeneye in 2. Jackdaw competition was studied in 15 natural cavities and 9 nesting boxes, and the jackdaw was found to have advantages over the goldeneye in nesting earlier. The earlier nesting species and the species which start incubation with the laying of the first egg, such as the tawny owl, jackdaw and stock dove, are able to occupy the nesting boxes and keep them in possession.--From summ.

Helminen, Matti. VESILINTUKANTOJEN LUONTAISET EDELLYTYKSET JA HYVÄKSIKÄYTTÖ POHJOIS-AMERIKASSA. [ON THE BIOLOGY, MANAGEMENT, AND UTILIZATION OF THE WATERFOWL POPULATIONS IN NORTH AMERICA.] Suomen Riista 15: 53-76, 9 figs. 1962. [In Finnish with English summ.] WR 110: 54

Waterfowl management in North America and Europe are compared. In North America international cooperation between United States and Canada and United States and Mexico facilitates organized management and regulated hunting pressure. In Europe, management of the waterfowl population is based largely on independent action in each country. Because of the system of private hunting rights in Europe, management of waterfowl in each country depends much on the individual landowner.--From summ.

Högström, Stig. NÅGRA IAKTTAGELSER RÖRANDE SKRAKARS OCH GRAVÄNDERS BETEENDE MOT FRÄMMANDE UNGAR. [OBSERVATIONS ON THE BEHAVIOR OF MERGANSERS AND SHELDUCKS TOWARDS ALIEN YOUNG.] Vår Fågelvärld 21(2): 133. 1962. [From Biol. Abstr. 41(2), 1963. (In Swedish) with English summ.] WR 110: 54

A downy young of Mergus serrator was seen to seek shelter with a female of M. merganser with feathered young. She maltreated the alien young, who fled to his right mother when the latter hastened to his rescue. A similar sequence of events was noted on another occasion, when a young of Tadorna tadorna was rejected by a couple of this species with five young of a much smaller size than himself. The male attacked the stranger vigorously and performed a greeting ceremony with the female when he had driven him away. However, other observations show that young of a different size may, at times, be accepted in a brood. A female of Mergus serrator was observed with 29 downy and one feathered young. Young of the same size but hatched by different females are also sometimes adopted by one female. An instance is mentioned of a female merganser with a "brood" containing 64 downy young.--Author.

Jansson, L. T., G. Hansson, I. Frycklund, and A. G. G. Thompson. SALSKRÄKAN (MERGUS ALBELLUS) UTBREDNING I SVERIGE. [ON THE DISTRIBUTION OF THE SMEW (MERGUS ALBELLUS) IN SWEDEN.] Vår Fågelvärld 21(2): 136, illus. 1962. [From Biol. Abstr. 41(2), 1963. (In Swedish) with English summ.] WR 110: 54

Karpovich, V. N. [COMPARATIVE STUDIES OF THE FALL MIGRATION OF DIVERS BASED ON COUNTS ALONG PERMANENT ROUTES AND ON RESERVATION LAKES.] Ornitologiya (Moscow) 2: 248-255. 1959. [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 6D330. From transl. of Russian abstr.] WR 110: 55
Conclusions were reached on basis of obtained data that most precise and complete diagrams of a poorly manifested migration result when counts along permanent routes are taken simultaneously with registration of ducks at rest on a large lake. When only one of 2 methods is used, more valuable results are provided by regular counts of ducks at rest on reservation lake, rather than counts along permanent routes over bottomlands beyond boundary of game reservation territory.

Linkola, Pentti. HAVAINTOJA SORSALINTUJEN LISÄÄNTYMISTULOKSESTA KESKI-HÄMEESSÄ. [NOTES ON THE BREEDING SUCCESS OF DUCKS IN CENTRAL HÄME.] Suomen Riista 15: 157-174, 5 figs. 1962. [In Finnish with English summ.] WR 110: 55
The breeding success of ducks was studied by making 2 visits to nests and noting egg losses and by counting the mean number of young in broods of all age classes. The mallard raised 7.0 young per brood, teal 5.9, tufted duck 4.1, pochard 5.2, and goldeneye 4.7. The goldeneye, goosander and red-breasted merganser breed for the first time at the age of 2 years.--From summ.

Martin, Frank R. (Shiawassee Natl. Wildl. Refuge, Saginaw, Mich.) COLORED VINYLITE BANDS FOR WATERFOWL. J. Wildl. Mgmt. 27(2): 288-290, 4 figs. Apr. 1963. WR 110: 55
Abstract: Easily attached and readily visible leg bands for Canada geese (Branta canadensis) were made by heat-forming 1- X 6-inch strips of colored vinylite around a slotted 3/4-inch electrical conduit, then rolling them into conformation on a steel rod of the desired diameter and sealing them with acetone. An experienced operator can fabricate 40 bands per hour.

Nass, Roger D. SEX AND AGE RATIO BIAS OF CANNON-NETTED GEESE. M. A. thesis, Univ. Mo. v + 44 p., 13 figs. 1963. WR 110: 55
A sequence of timed catches was made during two years to determine if the length of time the geese were on the bait before capture affected sex and age ratios. Tests of regression coefficients for percent adults and percent juveniles per catch indicated that the proportion of adults in a catch increases as length of time on the bait increases. No significant differences were found in the sex ratios as length of time on the bait increased. The age ratio of captured geese is probably not a close approximation of the age ratio in the population. A consistent basis for age ratio evaluation would be provived if all catches from year to year were made after the geese had been on the bait one specified length of time.--From summ.

Olney, P. J. S. (Wildfowl Trust, Slimbridge, Gloucestershire, England.) THE FOOD AND FEEDING HABITS OF TEAL ANAS CRECCA L. Proc. Zool. Soc. London 140(2): 169-210, 3 figs. Mar. 1963. WR 110: 55
Teal feeding on saltmarshes fed mainly on Salicornia seeds but also on almost any of the common saltmarsh flowering plants except Spartina townsendii and Halimione portulacoides. In brackish water areas the chief items were seeds of Scirpus maritimus, S. tabernaemontani and Eleocharis spp. and to a lesser extent on the mollusc Hydrobia jenkinsi. In freshwater areas almost any of the seed-bearing plants might be utilized, though there may be some limitation by size of seed. Eleocharis palustris and Ranunculus repens ranked high.

Pulliainen, Erkki. VARKAUDEN TALVEHTIVASTA SORSAKANNASTA. [ON THE MALLARD POPULATION OVERWINTERING IN VARKAUS, EAST FINLAND.] Suomen Riista 15: 181-187, 3 figs. 1962. [In Finnish with English summ.] WR 110: 55
Wintering of mallards was induced by attracting wild birds with tame ones and by artificial provision of food. Pairing starts in autumn, and wintering birds breed earlier than migrants.--From summ.

Sickles, Ray. (Pa. Game Comm., P. O. Box 1567, Harrisburg.) WHAT HAPPENED AT PYMATUNING? Pa. Game News 34(3): 18-23, 5 figs. Mar. 1963. WR 110: 56
This is an impressive story of the first season's hunting success on the Pymatuning Goose Management Area. On the first day of hunting, 141 hunters bagged 117 Canada geese. During the season, 2893 hunters killed 2046. Hunter success was 83% for the first day and 71% for the entire season.

Stephen, W. J. D. (Canadian Wildl. Serv., Saskatoon, Saskatchewan, Canada.) SOME RESPONSES OF FEMALE MALLARDS TO DISTURBANCE BY MAN. J. Wildl. Mgmt. 27 (2): 280-283, 1 fig. Apr. 1963. WR 110: 56
Abstract: All of 10 mallard (Anas platyrhynchos) females with broods at the ball of fluff stage performed distraction display following disturbance by man. Eighty-six percent (24 of 28) and 82 percent (18 of 22) of females with class I and class II broods, respectively, performed distraction display. Differences in posture behavior of mallard females with nests and those with broods in response to disturbance by man were not apparent. However, significantly more hens with nests, than hens with broods, performed distraction display for 10 seconds or less, whereas significantly more hens with broods made a quacking vocalization following distraction display.

Warner, Richard E. (Museum Vertebrate Zool., Berkeley, Calif.) RECENT HISTORY AND ECOLOGY OF THE LAYSAN DUCK. Condor 65(1): 3-23, 8 figs., 1 pl. Jan.-Feb. 1963. WR 110: 56
The population of the endemic Laysan duck (Anas laysanensis) on Laysan and Lisiansky islands was reduced to about a dozen individuals by 1924. This decline had been caused by humans killing the birds for food and by destruction of all plant life by introduced rabbits. The rabbits died off or were killed off about 1924, and increased protection was given the ducks. The population of ducks has increased so that in 1961 the population on Laysan Island was approximately 688. Some information is given on the biology of the species.--From summ.

Yocom, Charles F. (Humboldt State Coll., Arcata, Calif.) RECENT CHANGES IN CANADA GOOSE POPULATIONS IN GEOGRAPHICAL AREAS IN WASHINGTON. Murrelet 42 (2): 13-21. May-Aug. 1961. WR 110: 56
Presumably resulting from man-caused habitat changes, the Canada goose nesting population has markedly increased in recent years in eastern Wash. Nesting densities of 4-5 pairs per mile were found along the Columbia River as early as 1950.

CRANES, RAILS, SHOREBIRDS

Aldrich, John W. (US F&WS, Washington, D. C.) STATUS OF THE WHOOPING CRANE AND CONSERVATION EFFORTS--1962. Modern Game Breeding 33(1): 14-16, illus. Jan. 1963. WR 110: 56
Of the 38 whooping cranes flying north in the spring of 1962, only 32 returned in the fall, and there were no 1962-produced young among the 32. The plans of the U. S. Fish and Wildlife Service of supplementing the wild stock with captive-reared birds is outlined. A reliable technique for sexing cranes has been developed as a necessary step in breeding captive birds. The technique makes use of cloacal examination.

Bourne, W. R. P., and I. J. Patterson. THE SPRING DEPARTURE OF COMMON GULLS LARUS CANUS FROM SCOTLAND. Scot. Birds 2: 3-17. 1962. [From J. Animal Ecol. 32(1), 1963.] WR 110: 56
Spring migration of the common gull studied by radar.

Coulson, J. C. (Univ. Durham, Durham, England.) EGG SIZE AND SHAPE IN THE KITTIWAKE (RISSA TRIDACTYLA) AND THEIR USE IN ESTIMATING AGE COMPOSITION OF POPULATIONS. Proc. Zool. Soc. London 140(2): 211-227, 2 figs. Mar. 1963. WR 110: 57

In general, as female kittiwakes become older, their eggs become shorter and broader while the shape index (breadth X 100/length) and volume also tend to increase. The use of the age characteristics as a means of determining the age composition of breeding females in populations on colonies is discussed and applied to two colonies of kittiwakes where the age composition was unknown. It is suggested that, according to the species and the clutch size, the shape index and the variance of the breadth within a clutch are probably the most useful characters for such a method.--From abstr.

Huey, William S. (N. Mex. Dept. Game & Fish, Santa Fe.) SANDHILL CRANE STUDIES IN NEW MEXICO AND THEIR POSSIBLE RELATION TO WHOOPING CRANE MANAGEMENT. Modern Game Breeding 33(1): 16-17. Jan. 1963. WR 110: 57

Hatching and rearing of sandhill cranes is described. "The answers to many of the problems that might be faced in working with a captive Whooper population can be answered by...using the Sandhill Crane as a substitute."

Ludwig, James Pinson. (Bird Div. Museum Zool., Univ. Mich., Ann Arbor.) RETURN OF HERRING GULLS TO NATAL COLONY. Bird-Banding 34(2): 68-72, 1 fig. Apr. 1963. WR 110: 57

In 32 years 60,000 downy young herring gulls (Larus argentatus) were banded by the Ludwigs in the Great Lakes, and 40% of these birds were known to have returned to breed in their natal colonies.

Lugovoi, A. E. [LARINE BIRDS IN THE LOWLANDS OF THE VOLGA DELTA AND IN ADJACENT REGIONS OF THE NORTHERN CASPIAN.] Trudy Astrakh. Gosudarst. Zapovednika 4: 269-294. 1958 (1959). [From Biol. Abstr. 41(2), 1963, from Referat. Zhur., Biol., 1961, no. 6D355. Transl. of Russian abstr.] WR 110: 57

Given are habitation characteristics, migration and arrival periods, data on propagation, nest size and egg size of 18 spp. of gulls and terns. Destruction of clutches by egg collectors and carnivores (especially by Nyctereutes procyonoides) and changes in hydrological relief resulted in the extinction of nesting colonies of Larus ichthyaetus in the last 15 years in Volga delta and W part of N Caspian, and colonies of L. argentatus in dry delta and islands of W Caspian, and attrition in numbers of nesting Sterna hirundo. Small colonies of L. argentatus have appeared on new islands of delta front. Seasonal distribution of birds is discussed. After nesting period, gulls and terns concentrate in locations where food is plentiful. Some gulls winter in clearings and water breaks in ice cover.

Pearse, Theed. (Comox, British Columbia, Canada.) RESULTS FROM BANDING GLAUCOUS-WINGED GULLS IN THE NORTHERN GULF OF GEORGIA, B. C., FROM 1922 TO 1949. Bird-Banding 34(1): 30-36. Jan. 1963. WR 110: 57

Of 1894 birds banded, 100 were recovered. The recoveries were tabulated relative to the ages of the birds and the distances traveled.

Wodzicki, Kazimierz. (New Zealand Dept. Sci. & Industrial Res., Wellington.) COUNTS OF GULLS ON OTAKI BEACH, NORTH ISLAND OF NEW ZEALAND. Notornis 10(2): 80-83, 1 fig. Sept. 1962. WR 110: 57

Summary: Eleven counts of black-backed and red-billed gulls were carried out in Mar. 1961 on a seven miles long beach between the Otaki and Ohau rivers. Juvenile black-backed gulls amounted to a quarter of the population and the overall density was estimated at 29 black-backed and 17 red-billed gulls per mile.

OTHER BIRDS

Anderson, A. THE BREEDING OF THE STARLING IN ABERDEENSHIRE. Scot. Nat. 70: 60-74. 1961. [From J. Animal Ecol. 32(1), 1963.] WR 110: 58

A study of the breeding of the starling in relation to its food supply.

Anderson, Anders H., and Anne Anderson. (3221 E. Kleindale Rd., Tucson, Ariz.) LIFE HISTORY OF THE CACTUS WREN. PART VI: COMPETITION AND SURVIVAL. Condor 65(1): 29-43, 3 figs. Jan.-Feb. 1963. WR 110: 58

The house cat was the most serious predator. Average age of 7 ♂♂ was 737 days and of 16 ♀♀ 493 days.

Balát, František. (Czechoslovak Acad. Sci., Lidická 79, Brno.) ROZMÍSTĚNÍ A PŘESUNY SKORCE VODNÍHO NA POTOCE V ZÁVISLOSTI NA STÁŘÍ, ROČNÍ DOBĚ A PROSTŘEDÍ. [DISTRIBUTION AND MOVEMENTS OF THE DIPPERS, CINCLUS CINCLUS AQUATICUS BECHST. ON A CREEK AND THEIR CHANGES DURING A YEAR.] Zool. Listy 11 (2): 131-144, 7 figs. 1962. [In Czech with English abstr.] WR 110: 58

The local movements of color-banded dippers were followed throughout the year. When leaving the nest at 24 days of age, the young are usually distributed downstream, but they later also occupy the area upstream from the hatching place. The young are capable of life independent of the parent when 5-6 weeks of age. After separation from their parents, young dippers leave the hatching site and travel along their natal streams. The nesting site of young nearest the hatching place was 42 km distant. After their first nesting, the birds are relatively sedentary, moving only to the nearest suitable open water in the winter months and returning to the nesting place following spring high waters.

Baldwin, Paul H., and William F. Hunter. (Colo. State Univ., Fort Collins.) NESTING AND NEST VISITORS OF THE VAUX'S SWIFT IN MONTANA. Auk 80(1): 81-85, 1 fig. Jan. 1963. WR 110: 58

Information is given on the status of the Vaux's swift in Montana as well as on its breeding biology, growth rate, and visits to the nest by individual Vaux's swifts other than the nesting pair.

Brewer, Richard. (Western Mich. Univ., Kalamazoo.) ECOLOGICAL AND REPRODUCTIVE RELATIONSHIPS OF BLACK-CAPPED AND CAROLINA CHICKADEES. Auk 80(1): 9-47, 2 figs. Jan. 1963. WR 110: 58

From Kans. to central Ill. the breeding ranges of the two species are apparently contiguous; eastward from central Ill. to the Atlantic coast, there is a gap up to several miles wide between the ranges. Ecologically the two species are very similar in every aspect investigated, and competition between them is inevitable if both occupy the same area. The mechanism for prevention of hybridization may have been the production of a gap between the breeding ranges of the two species. The gap was established during some interglacial period. A long bibliography (more than 80 titles) is included.

Chisholm, A. H. (Sydney, Australia.) THE GOLDEN BOWER-BIRD AT THE NEST AND BOWER. Emu 62(4): 251-256, 2 pls. Feb. 1963. WR 110: 58

The golden bower-bird (Prionodura newtoniana) nests on mountains in heavy rain forests, and little is known of its nesting habits. Photographs and information (based on 3 nests) are given.

Davis, L. Irby. SONGS OF NORTH AMERICAN MYIARCHUS. Texas J. Sci. 13(3): 327-344. 1961. [From review by M. M. Nice, Bird-Banding 33(3), 1962.] WR 110: 58

Detailed descriptions are given of the songs of all North American crested flycatchers. Two spectograms are given for the crested flycatcher (Myiarchus crinitus) and 7 for the songs of other species. There is discussion on the evolutionary development of the different song patterns.

Dickerman, Robert W. THE SONG SPARROWS OF THE MEXICAN PLATEAU. Minn. Museum Nat. Hist. Occas. Papers no. 9. ix + 79 p., 29 figs. 1963. WR 110: 59
Primarily a taxonomic paper, but it contains much information on the ecology and evolution of song sparrows.

Dunnet, G. M., A. Anderson, and R. M. Cormack. (Univ. Aberdeen, Aberdeen, Scotland.) A STUDY OF SURVIVAL OF ADULT FULMARS WITH OBSERVATIONS ON THE PRE-LAYING EXODUS. British Birds 56(1): 2-18, 3 figs. Jan. 1963. WR 110: 59
Both sexes leave the nesting area and remain away during about 2 weeks before egg-laying. The female remains on the nest only a few hours after egg-laying and leaves the first stint of incubation, averaging 6-7 days, to the male. The birds later take turns at incubation, but later stints are shorter, averaging 4-5 days. The average life span was estimated at 15.58 ± 1.93 years.

Eisenmann, Eugene. (Am. Museum Nat. Hist., N. Y.) BEAR ISLAND MURRE COLONY. Nat. Hist. 72(1): 26-31, illus. Jan. 1963. WR 110: 59
This well-illustrated article contains information on the breeding habits of the common (Uria aalge) and thick-billed (U. lomvia) murres on Bear Island in the Barents Sea.

Gut, Stefan. BOCIAN BIAŁY W NIEBEZPIECZEŃSTWIE. [THE WHITE STORK IN DANGER.] Chrońmy Przyrode Ojczysta 17(2): 27-30, 56-57. Mar.-Apr. 1961. [In Polish with English summ.] WR 110: 59
In the period 1934-1958 the number of white storks in Europe decreased almost by half. In Netherlands and Denmark about 20% of the 1934 population of white storks have survived. The Polish population has diminished by one-fifth. Reasons advanced for the decline of this species: telephone and electric wires as obstacles to flight, decrease in habitat through draining, losses during migration, hunting, and the effect of secondary poisoning from chemical insecticides of orthoptera.

Hoyt, Sally F. (Etna, N. Y.) THE CHANGING STATUS OF THE PILEATED WOODPECKER IN NEW ENGLAND. Mass. Audubon 47(3): 114-117, illus. Spring 1963. WR 110: 59
A tabulation of results of Christmas bird counts indicates a recent increase in observations of pileated woodpeckers in Me., N. H.; Vt., Mass., and Conn. The most marked increase occurred after 1950.

Liversidge, R. (Port Elizabeth Museum, Port Elizabeth, South Africa.) THE WATTLED STARLING (CREATOPHORA CINEREA) (MENSCHEN). Ann. Cape Provincial Museums 1: 71-80 + 1 pl. Mar. 1961. WR 110: 59
The species is not a regular migrant, but wanders widely. Ecological factors such as association with breeding locusts and feeding habits are given. The wattled condition of both sexes is discussed; sexual dimorphism probably disappears with age. There is a clinal color variation in the geographical distribution. Both sexes take part in all breeding activities. False nests and nest destruction is mentioned. The remarkable timing in the breeding results in the colony having a limited existence of only five weeks. Fledgling period is 15 to 16 days.--From summ.

Lowe, V. T. (Mystic Park, Victoria, Australia.) OBSERVATIONS ON THE PAINTED SNIPE. Emu 62(4): 221-237, 2 figs. + 1 pl. Feb. 1963. WR 110: 59
Information is given on field identification, breeding biology, behavior, predators and population status of the painted snipe (Rostratula benghalensis). Too little is known about this bird in Australia to enable its effective conservation. As an example, only 6 birds have been banded and only 1 recovered.

Lundin, Allan. OBSERVATIONER RÖRANDE ÖVERVINTRING OCH ÖVERNATTNING HOS KAJAN (CORVUS MONEDULA). [ON THE WINTERING AND ROOSTING HABITS OF THE JACKDAW.] Vår Fågelvärld 21: 81-95. 1962. [From Bird-Banding 34(1), 1962. (In Swedish) with English summ.] WR 110: 60

During July and Aug. jackdaws arrived at their roosting place before sunset and left after sunrise. During Sept. until early Nov. there was an increasing tendency to arrive later in relation to the sun's cycle and to leave earlier so that they finally arrived after sunset and left before sunrise. In early Mar. the birds started to again arrive at the roost earlier and to leave later. The explanation given is that the birds thus compensated for the shortening of the daylight or feeding period during the critical season of winter.

Masatomi, Hiroyuki. ATTACKING BEHAVIOR IN HOMOSEXUAL GROUPS OF THE BENGALEE, RUOLONCHA STRIATA, VAR. DOMESTICA FLOWER. J. Faculty Sci., Hokkaido Univ. Ser. VI, Zool. 14(2): 234-251. 1959. [From review by M. M. Nice, Bird-Banding 33 (2), 1962.] WR 110: 60

Two homosexual pairs were formed within each group, and aggression appeared between these pairs in relationship to the one nest provided in each cage. The author discusses other studies in relation to social hierarchy, territory, homosexual relationship and frustration.

Masatomi, Hiroyuki. TERRITORIAL BEHAVIOUR BETWEEN TWO PAIRS OF THE BENGALEE IN TWO DIFFERENT CAGES. J. Faculty Sci., Hokkaido Univ. Ser. VI, Zool. 14(3): 387-409. 1960. [Review by M. M. Nice, Bird-Banding 33(2), 1962.] WR 110: 60

The two pairs of the bengalees were put first into a large elongate horizontal cage, then after a month transferred to a large vertical cage. Territories were established around each nest provided; eggs were laid and incubated but they failed to hatch, due in part to interference between the pairs. Territorial behavior did not differ in the two types of cages. These birds had already raised young in other cages. The author suggests that "Pre-existence of the pair bond before the beginning of observation may be one of the most important factors in the formation of a definite territoriality." A wide selection of references is discussed.

Masatomi, Hiroyuki. COMMUNAL USE OF ONE AND THE SAME NEST BY TWO BREEDING PAIRS OF THE BENGALEE. Behaviour 17(4): 261-274. 1961. [From review by M. M. Nice, Bird-Banding 33(2), 1962.] WR 110: 60

Four sibling bengalees were kept together in a cage containing one artificial nest. The birds paired, and all used the nest without friction. All incubated, but the embryos died in the shell. A new-born white mouse was substituted for the eggs; one female brooded the mouse and regurgitated food. A male bengalee attacked the strange object, whereupon it was removed and replaced with a 10-day old bengalee. The young bird was cared for by all members of the group.

Panfil, Jan. INWENTARYZACJA BOCIANOW BIAŁYCH I ICH GNIAZD NA MAZURACH. [A SURVEY OF THE WHITE STORK NESTS IN THE MAZURIAN LAKE DISTRICT.] Chrońmy Przyrode Ojczysta 17(2): 30-32, 57. Mar.-Apr. 1961. [In Polish with English summ.] WR 110: 60

In a 1960 survey of 10% of the villages in 7 districts of Olsztyn province 116 occupied nests were found and 20 abandoned ones. The age ratio for the 508 censused was 232 adult:276 juvenile.

Parks, G. Hapgood, and Hazel C. Parks. (99 Warrenton Ave., Hartford, Conn.) SOME NOTES ON A TRIP TO AN EVENING GROSBEAK NESTING AREA. Bird-Banding 34(1): 22-30. Jan. 1963. WR 110: 60

Five hundred evening grosbeaks were banded and 16 recoveries obtained in two 3-cell Potter traps on the Patapedia River in Quebec in a period of 11 days during June 1962. The birds recovered had been banded in Pa. (5), N. Y. (3), Mass. (3), N. H. (2), Mich. (1), and Wis. (1).

Parks, G. Hapgood, and Hazel C. Parks. (99 Warrenton Ave., Hartford, Conn.) EVENING GROSBEAKS DIED TO SUPPLY BANDS FOR THIS "JEWELRY". Bird-Banding 34(2): 73-86, 1 fig. Apr. 1963. WR 110: 61

Information is given on the age, sex, place and date of banding and date of recovery of 278 birds (275 evening grosbeaks and 3 purple finches) most of which were shot in Quebec to recover the bands in a misguided effort at co-operation. [See earlier paper by Shaub cited in WR 108: 64 and paper by Parks & Parks (WR 110: 60) for other details of this incident.]

Peña, Luis A. (Casilla 2974, Santiago, Chile.) NOTES ON SOUTH AMERICAN FLAMINGOS. Postilla (Yale Peabody Museum) 69: 1-8, illus. 1962. [From Biol. Abstr. 42(5), 1963.] WR 110: 61

Three spp. of flamingos that live and nest in the mountains in the province of Antofogasta, Chile, and the neighboring regions of Bolivia, have been identified and observed. Notes on ranges and behavior, including migration, and descriptions with colored schematic drawings to show the distinctions, are given for Phoenicoparrus chilensis, P. andinus, and P. jamesi. The relative abundance of the 3 spp. in several different localities is tabulated.--A. K. Winner.

Shaub, Mary S. (159 Elm St., Northampton, Mass.) EVENING GROSBEAK WINTER INCURSIONS--1958-59, 1959-60, 1960-61. Bird-Banding 34(1): 1-22. Jan. 1963. WR 110: 61

Reported occurrences of the evening grosbeak are given, month by month, for the 3 winters. The birds traveled as far south as Birmingham, Alabama.

Snow, Barbara K. THE BEHAVIOUR OF THE SHAG. British Birds 56(3): 77-103, 3 figs., 8 pls. Mar. 1963. WR 110: 61

Observations of the shag (Phalacrocorax aristotelis) were made on Lundy, Bristol Channel, from May 1954 to May 1958. The social and courtship displays are described and figured, with analyses of their aggressive and submissive elements. The vocal repertoire is described and observations included of interspecific contacts.--W. T. Van Velzen.

Snow, Barbara K. THE BEHAVIOUR OF THE SHAG. (PART 2). British Birds 56 (5): 164-186, 1 fig. May 1963. WR 110: 61

Nest building, incubation and feeding periods are presented in detail. The development of the young shag's behavior is given including its departure from the nest and the development of its locomotory ability, voice, social behavior and displays. [See above for Part 1.]--W. T. Van Velzen.

Snow, D. W. (N. Y. Zool. Soc., New York 60.) NOTES ON THE BIOLOGY OF SOME TRINIDAD SWIFTS. Zoologica 47(3): 129-139, 1 fig. Fall 1962. WR 110: 61

The breeding and other aspects of the biology of swifts of the genera Chaetura and Cypseloides were studied in Trinidad, West Indies. The status of the 5 resident and 1 migrant species is summarized.--From summ.

Snow, D. W. (N. Y. Zool. Soc., New York 60.) THE NATURAL HISTORY OF THE OILBIRD, STEATORNIS CARIPENSIS, IN TRINIDAD, W. I. PART 2. POPULATION, BREEDING ECOLOGY AND FOOD. Zoologica 47(4): 199-221, 4 figs. + 4 pls. Winter 1962. WR 110: 61

Stafford, J. (Westering, Moor Lane, Brighstone, Isle of Wight, England.) THE CENSUS OF HERONRIES, 1960-61. Bird Study 10(1): 29-33. Mar. 1963. WR 110: 61

The heron population in the British Isles decreased about 12% from 1954 to 1960, about 9% from 1959 to 1960, and about 6% from 1954 to 1961. It increased about 8% from 1960 to 1961.

OTHER BIRDS--Continued

Stokes, A. W. THE COMPARATIVE ETHOLOGY OF GREAT, BLUE, MARSH AND COAL TITS AT A WINTER FEEDING STATION. Behaviour 19: 208-218. 1962. [From J. Animal Ecol. 32(1), 1963.] WR 110: 62

Observations of birds at a feeding platform supplied with a variety of seed at Madingley. Describes similar display patterns of varied frequencies in the four species and discusses the relations between timidity and density and territoriality, and the importance of behavior in both intra- and inter-specific communication.

Taylor, R. H., and H. S. Roberts. (Dept. Sci. & Industrial Res., Wellington, New Zealand.) GROWTH OF ADELIE PENGUIN (PYGOSCELIS ADELIAE HOMBRON AND JACQUINOT) CHICKS. New Zealand J. Sci. 5(2): 191-197, 3 figs. June 1962. WR 110: 62

Summary: The growth of Adelie penguin chicks from hatching to an age of 50 days was studied at Cape Royds during 1959-60. The changes in the chicks' weights followed closely a truncated normal curve; agreement with the more commonly used Gompertz and logistic curves was less close. For chicks of identical age, single chicks and first chicks to hatch in nests with two chicks tended to be heavier than second chicks or those surviving in nests where another chick had died.

Telford, Allan D., and Steven G. Herman. (Univ. Calif., Berkeley.) CHICKADEE HELPS CHECK INSECT INVASION. Audubon Magazine 65(2): 78-81, illus. Mar.-Apr. 1963. WR 110: 62

Chickadees feed heavily on lodgepole needle miner moth in Calif. and help control these insects. "Despite the current unpopular status of bird predation research, the mountain chickadee and other native avian insectivores warrant our attention.... The role of avian predation during sub-outbreak conditions is almost unknown."

Tubbs, C. R. THE SIGNIFICANCE OF THE NEW FOREST TO THE STATUS OF THE DARTFORD WARBLER IN ENGLAND. British Birds 56(2): 41-48. Feb. 1963. WR 110:

The area in England of suitable habitat for the Dartford warbler (Sylvia undata) is being reduced and fragmented so that habitats may not be large enough to support the birds except in the New Forest in Hampshire. Colonization of habitat by the Dartford warbler occurs 4-6 years after burning, and a burning program is recommended for the New Forest so that 800 acres will be annually burned and 4000 acres will always be available as breeding habitat.

REPTILES AND AMPHIBIANS

Banks, Richard C., and Wesley M. Farmer. (Nat. Hist. Museum, San Diego, Calif.) OBSERVATIONS ON REPTILES OF CERRALVO ISLAND, BAJA CALIFORNIA, MEXICO. Herpetologica 18(4): 246-250. Jan. 1963. WR 110: 62

An annotated list of 9 spp.

Cunningham, John D. (Univ. Calif., Los Angeles 24.) ADDITIONAL OBSERVATIONS ON THE ECOLOGY OF THE YOSEMITE TOAD, BUFO CANORUS. Herpetologica 19(1): 56-6 4 figs. 11 Apr. 1963. WR 110: 62

Comparisons of body and environmental temperatures of active Bufo canorus,

Dent, James Norman, and John S. Kirby-Smith. (Univ. Va., Charlottesville.) METAMORPHIC PHYSIOLOGY AND MORPHOLOGY OF THE CAVE SALAMANDER GYRINOPHILUS PALLEUCUS. Copeia 1963(1): 119-130, 5 figs. 30 Mar. 1963. WR 110: 62

Durham, Leonard, and George W. Bennett. (Eastern Ill. Univ., Charleston.) AGE, GROWTH, AND HOMING IN THE BULLFROG. J. Wildl. Mgmt. 27(1): 107-123, 8 figs. Jan. 1963. WR 110: 63

Abstract: A study of the bullfrog (Rana catesbeiana) at a 17-acre east-central Ill. lake revealed large fluctuations in numbers of frogs over two 4-year periods. The smallest number of bullfrogs caught, marked, and released in a single year was 15; the largest number was 93. The average total length of bullfrogs 2 years after metamorphosis was 12.1 inches. No significant difference in rate of growth between males and females was detected. Females had a higher average index of condition than males. Both males and females demonstrated homing behavior--females more than males and large frogs more than small frogs.

Fickess, Douglas R. (Westminster Coll., Fulton, Mo.) ADRENAL RESPONSE OF THE DIAMOND-BACK WATER SNAKE (NATRIX RHOMBIFERA) TO STRESS. Herpetologica 18 (4): 250-253, 2 figs. Jan. 1963. WR 110: 63

Histological changes and increases in weight were noted in the adrenals of diamond-back water snakes subjected to stress. The increase in the per cent body weight of the adrenals, while not statistically significant, was thought to be biologically significant, particularly when considered in the light of the change in the histological appearance of the glands.--From summ.

Gorham, Stanley W. (Natl. Museum Canada, Ottawa, Ontario.) THE COMPARATIVE NUMBER OF SPECIES OF AMPHIBIANS IN CANADA AND OTHER COUNTRIES. III. SUMMARY OF SPECIES OF ANURANS. Canadian Field-Nat. 77(1): 13-48. Jan.-Mar. 1963. WR 110: 63

Species lists are given for South America, North America, Europe, Asia, Australia, and Africa, and the approximate number of species for each country is compiled.

Highton, Richard. (Univ. Md., College Park.) REVISION OF NORTH AMERICAN SALAMANDERS OF THE GENUS PLETHODON. Bull. Fla. State Museum 6(3): 235-367, 44 figs. 31 Dec. 1962. $1.55. WR 110: 63

Systematic study of North American salamanders genus Plethodon reveals 3 major groups: western plethodons, 5 spp.; eastern small plethodons, 5 spp.; and eastern large plethodons, 5 spp.--From synopsis.

Hinckley, Alden D. (Princ. Agr. Sta., Koronivia, Fiji.) DIET OF THE GIANT TOAD, BUFO MARINUS (L.), IN FIJI. Herpetologica 14(4): 253-259. Jan. 1963. WR 110: 63

Analysis of stomach contents showed that both beneficial and injurious invertebrates are eaten, and it was concluded that the giant toad is economically neutral.

Hirth, Howard F. (Univ. Utah, Salt Lake City.) THE ECOLOGY OF TWO LIZARDS ON A TROPICAL BEACH. Ecol. Monographs 33(2): 83-112, 9 figs. Spring 1963. WR 110: 63

This is a reasonably comprehensive study of the ecology of 2 lizards, Ameiva quadrilineata and Basiliscus vittatus. Habitats, range, diurnal and nocturnal activity, thermoregulation, food, feeding behavior, movements, growth, longevity, reproduction, parasites, predators, structure of population, locomotion, aggregation and animal associates are discussed.

Hutchison, Victor H., and Allen Vinegar. (Univ. R. I., Kingston.) THE FEEDING OF THE BOX TURTLE, TERRAPENE CAROLINA, ON A LIVE SNAKE. Herpetologica 18(4): 284. Jan. 1963. WR 110: 63

A captive box turtle captured and attempted to eat a live garter snake (Thamnophis sirtalis) placed in the same cage. The snake was partly swallowed before removed and found to have a broken skull and vertebrae.

King, Wayne. (Univ. Chicago, Chicago, Ill.) SYSTEMATICS OF LESSER ANTILLEAN LIZARDS OF THE GENUS SPHAERODACTYLUS. Bull. Fla. State Museum 7(1): 1-52, 17 figs. 31 Dec. 1962. 60¢. WR 110: 63

Mayhew, Wilbur W. (Univ. Calif., Riverside.) TEMPERATURE PREFERENCES OF SCELOPORUS ORCUTTI. Herpetologica 18(4): 217-233, 9 figs. Jan. 1963. WR 110: 64

These lizards are excellent heliotherms, so daily activity patterns are largely controlled by their temperature requirements. Neither air temperatures measured one meter or one centimeter above the substrate, nor the rock surface temperature seem to affect materially the body temperatures of these animals. Normal activity range for body temperature appeared to be from 29 to 37 C. Some evidence was presented to indicate that an unknown triggering mechanism for emergence from hibernation other than warmer weather seems to be utilized.--From summ.

Mayhew, Wilbur W. (Univ. Calif., Riverside.) REPRODUCTION IN THE GRANITE SPINY LIZARD, SCELOPORUS ORCUTTI. Copeia 1963(1): 144-152, 4 figs. 30 Mar. 1963. WR 110: 64

Mayhew, Wilbur W. (Univ. Calif., Riverside.) BIOLOGY OF THE GRANITE SPINY LIZARD, SCELOPORUS ORCUTTI. Am. Midland Nat. 69(2): 310-327, 6 figs. Apr. 1963. WR 110: 64

Included is information on abundance, movements, food, molt, growth, and reptile associates of this species.

Mayhew, Wilbur W. (Univ. Calif., Riverside.) SOME FOOD PREFERENCES OF CAPTIVE SAUROMALUS OBESUS. Herpetologica 19(1): 10-16, 2 figs. 11 Apr. 1963. WR 110: 64

Three immature captive Sauromalus obesus showed a preference for yellow Gazania petals when given choice of yellow, orange, bronze and white Gazania petals and yellow Hypericum petals. One lizard ate Tenebrio larvae almost exclusively after refusing them in the previous year of its captivity.--From summ.

Meseth, Earl H., and Owen J. Sexton. (Washington Univ., St. Louis, Mo.) RESPONSE OF PAINTED TURTLES, CHRYSEMYS PICTA, TO REMOVAL OF SURFACE VEGETATION. Herpetologica 19(1): 52-56. 11 Apr. 1963. WR 110: 64

Three experimental plots, each divided into an experimental and control subplot, were located in areas where aquatic vegetation formed dense surface mats. The vegetation in each experimental subplot was clipped and removed to a depth of three inches in one experiment and to 12 inches in a second. It was shown that Chrysemys emigrated from the experimental subplots when the vegetation in them was clipped to three inches. Further emigration from the experimental subplots was observed upon clipping the vegetation to a depth of 12 inches. It was hypothesized that through clipping, the support element of the vegetation upon which Chrysemys depended for important behavioral and physiological processes was removed, and movement out of the plot was induced.--From summ.

Smith, Hobart M., and Donald C. Nickon. (Univ. Ill., Urbana.) PRELIMINARY EXPERIMENTS ON THE ROLE OF THE CLOACAL BURSAE IN HIBERNATING TURTLES. Nat. Hist. Misc. no. 178. 8 p. 15 Dec. 1961. WR 110: 64

Importance of cloacal bursa in respiration during hibernation still lacks experimental proof.--From summ.

Soulé, Michael. (Stanford Univ., Stanford, Calif.) ASPECTS OF THERMO-REGULATION IN NINE SPECIES OF LIZARDS FROM BAJA CALIFORNIA. Copeia 1963(1): 107-115, 2 figs. 30 Mar. 1963. WR 110: 64

Both endogenous and exogenous factors appear to contribute to body temperature variation. Positive correlations between air and body temperatures were found for four species. Besides such environmental effects, observations and experiments suggest that species of lizards occurring in thermally diverse habitats have greater tolerances to extreme body temperatures than do forms occurring in less diverse habitats. A survey of the literature points to a correlation between the number of species and the variance of the mean body temperatures within a group of closely related forms.--From abstr.

FISHES

Sigler, William F., and Robert Rush Miller. FISHES OF UTAH. Utah State Dept. Fish & Game. 203 p., illus. 1963. WR 110: 65

"The purpose of this book is to better acquaint the fisherman, the student, and the general public with the different kinds of fish known to occur in Utah and to make available information, much of it new, on the distribution, life history, and habits of these animals.... In order to assist the angler in identifying his catch and to stimulate the study of Utah's fishes, keys to the major groups (eight families) and to the 49 species are provided. All but four of the species are illustrated, 19 by color plates and 44 by line drawings: in addition, the usefulness of the family key is enhanced by outline drawings of each major group. All of these illustrations will greatly help the user in identifying his catch. A glossary of the terminology used to describe and identify fishes is included, as are drawings that serve to illustrate some of these. In the section dealing with life histories, the account of each family of fishes includes comments on content, characteristics, distribution, habits, and importance. A list of general and specific references opens up the subject to the reader who desires more information."

INVERTEBRATES

Benton, Allen H., and Daniel Smiley, compilers. (Smiley: Mohonk Lake, New Paltz, N. Y.) THE FLEAS OF ULSTER COUNTY, NEW YORK. John Burroughs Nat. Hist. Soc., Res. & Records Com. Bull. no. 6. 7 p., 2 figs. Apr. 1963. 30¢. WR 110: 65

Twenty-one species of fleas were recorded from mammals of the region. Annotated as to host.

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